MAGIC NUMBERS FOR SMALL-BLOCK MOPARS

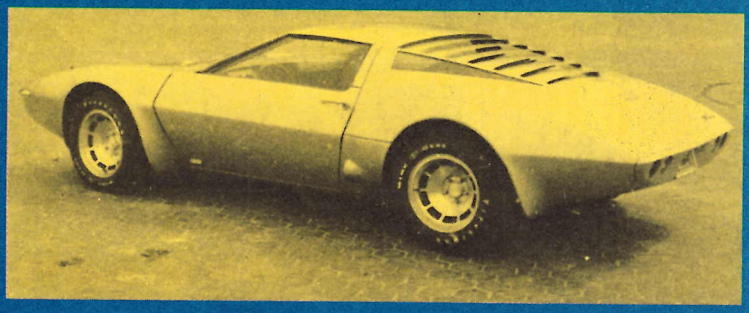
ICD

CAR LIFE

SOON TO BE
TECH AUTO

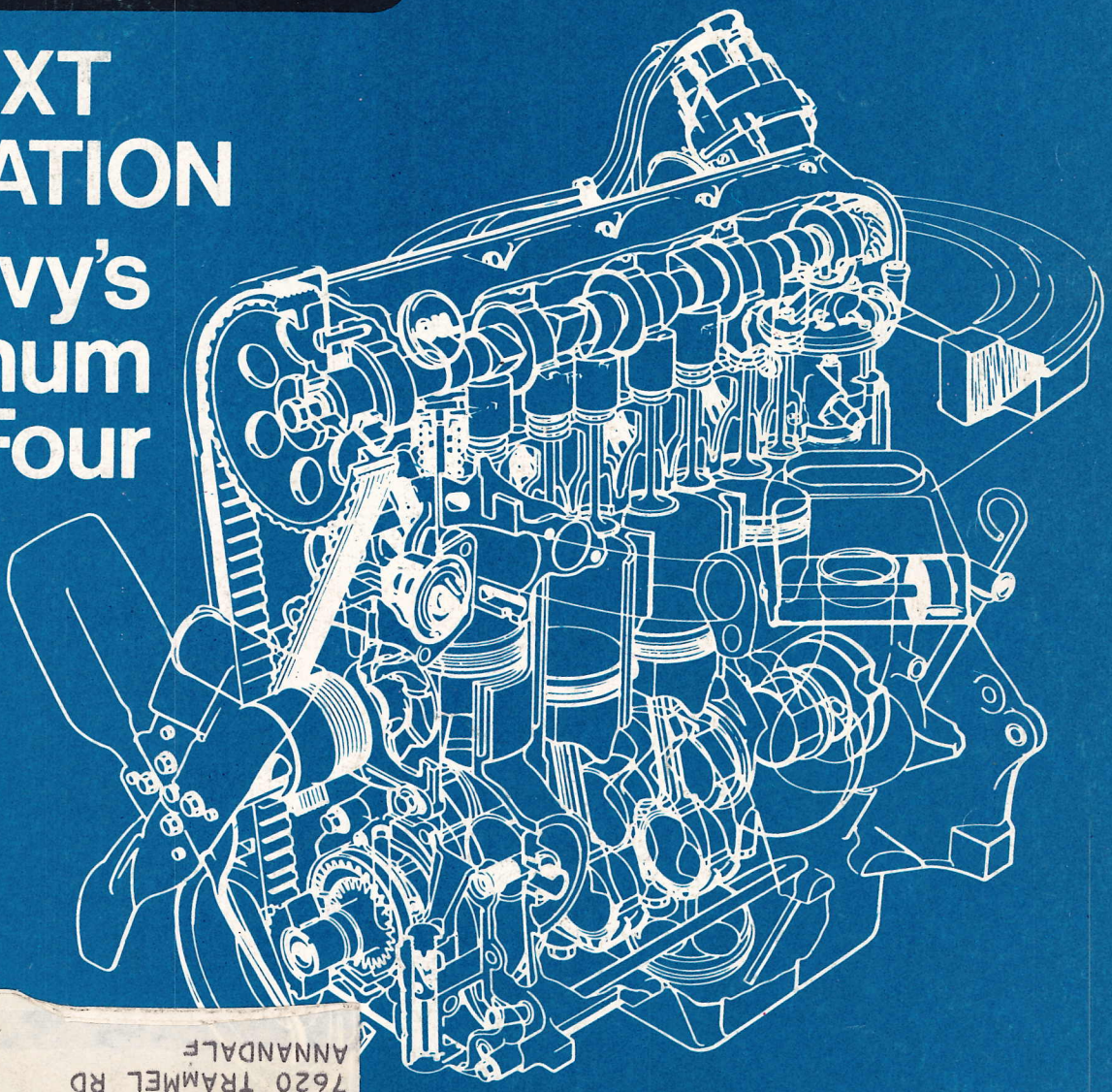
JULY 1970

60¢



THE NEXT CORVETTE?

THE NEXT GENERATION
Chevy's Aluminum Four



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7620 TRAMMEL RD
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AAR BARRACUDA: DRIVING THE LATE SHOW

Capri.
The first sexy European under $2300.

Manufacturer's suggested retail price. Does not include transportation charges, dealer preparation, if any, state and local taxes.

There used to be two kinds of imports. Beautiful, sporty and expensive; or plain, dull and inexpensive. Now there's something better than either: it's beautiful and inexpensive. It's the success car of the decade in Europe, and now it's available in America in limited quantities.

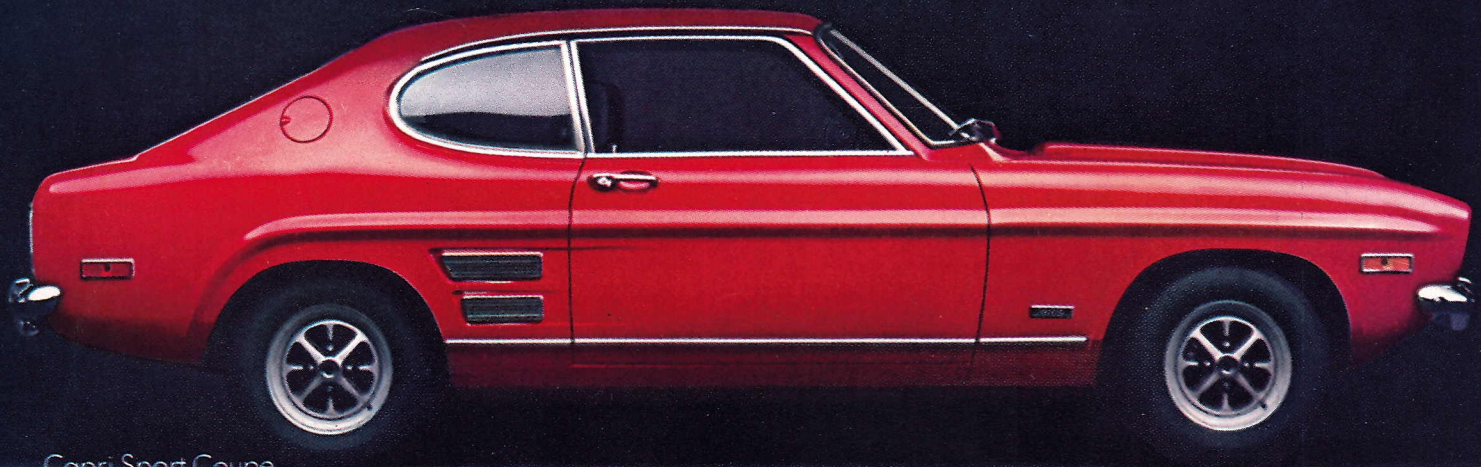
Capri offers an extravagant collection of exciting features as standard equipment. Features that are usually optional. Radial tires. Styled steel wheels. Soft vinyl front buckets (red car comes with black vinyl; other interiors: beechnut [shown], blue and red). Luxurious carpeting. A European-type instrument panel with wood grain effect. Flow-thru ventilation.

Sound unfamiliar for a low-priced car? It is.

And there's still more that's standard. Lots of room for four big adults. Easy maintenance (with lots of do-it-yourself tips in the owner's manual). Power disc brakes up front. Four-speed synchromesh transmission. The kind of gas mileage you'd expect from a small imported car.

There's only one word for it. Sexy. And that's unheard of at less than $2300. Until now.

Imported by Lincoln-Mercury.



Capri Sport Coupe.

LINCOLN·MERCURY Ford

ALLAN GIRDLER
Editor

JOHN DINKEL
Engineering Editor

JOE SCALZO
Feature Editor

WALLY WYSS
Associate Editor

EOIN YOUNG
European Editor

BARBARA FORTON
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ROGER L. MORRISON
Art Associates

JOHN and ELAINE BOND
Publishers

JEAN WHITE
Publishers' Assistant

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Editorial Director

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Senior Art Consultant

DAVE BLACK
Production Manager

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Production Assistant

RAY POWERS
Circulation Director

PATSY PLATT
Circulation Manager

JAMES P. HAMILTON
Director of Marketing

MIKE ANSON
Research Librarian

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CAR LIFE

JULY 1970 *Volume 17 Number 6*

TECHNICAL

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THE NEW YORK SHOW—Had everything; mid-engined GT cars, customized Ponycars, dream cars, racing cars, experimental cars, everything. Maybe some of it will be seen someday in real life. 52

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DIRTY WORK AT THE MINT 400—Sit in the desert sun under the shade of a cactus tree long enough and you'll see every sort of vehicle known to man storm by. 34

PRETTY GOOD WORK FOR A ONE-EYED FAT MAN—Parnelli's Mustang won Laguna Seca going away. Javelin fans went home with their heads held high. And Camaro needed a little help from its friends. 64

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CAR LIFE

FIRST PLACE

DOGGED optimism is one of my few redeeming traits. All around us are portents of disaster, predictions that the power of righteousness will prevail, and force us car nuts to stand, as an English colleague put it, in the snow at the bus stop every morning of our lives. I don't think it's going to happen.

Listen to this: "...may well be the last of the powerful Detroit Supercars...there's no doubt that the horsepower cycle is coming to the end of its course. State and federal governments are fed up with it and reaching for legal weapons to kill it. Detroit's current stock cars are so hot that it's questionable whether most operators are quick enough and competent enough to control them. Cost of purchase, operation and maintenance have become excessive. Most sane minds in Detroit, and there really are some, know that the time for house cleaning is overdue."

My quote is from a road test published 13 years ago. Its subject was the most powerful car then on the market. The car turned the quarter-mile in 16.9 sec. Every Ponycar, every Intermediate, every Standard listed in our Comparator would blow its doors off. While emitting one-fifth the pollutants.

It was common knowledge in the 13th Century that man could not live near the Equator. The vertical rays from the sun would kill him. Then railroads became a peril. The human body couldn't withstand the forces generated by 20 mph speeds.

Ecclesiastes was right. There is nothing new. The safety wowsers and moralists, whose present sensible cars probably could put the hurt on 1957's Threat To Life On Earth, have been baying at us, trying to make us live up to their standards for centuries. They were just as big in voice and small in numbers in 1957 as they are now. They failed then. I expect they will continue to fail.

But suppose the doomsayers are right, that the public is losing interest in the private motor car. We enthusiasts aren't. As the routine buyers fade into the subway, who will the makers be forced to fight over? Us, who else?

There would not be, in my vision, one sedan with four names and trims. There would be roadsters, Ponywagons, trim, nimble sedans, big tough road cars.

And think of the ads. Radio would be safe for enthusiast ears. Chevrolet wouldn't be able to get away with those gross bits about nearly two tons of luxury and 18 feet of comfort. Ford couldn't say that the man who's always wanted a $12,000 Le Mans job can do it with a Maverick wearing dual racing mirrors, racing stripes, 14-in. wheels and whitewall tires. A seductive girl couldn't tell you that her boyfriend is a nuthin', a born loser who has her only because he has a Datsun sedan.

If the worst comes true, if I am wrong and the safety wowsers and self-appointed public defenders prevail, I still see light.

I am exposed, as you are, to the voices of our leaders. Astonishing. If I understand the Secretary of the Interior correctly, in the glorious past we all loved standing in the snow. We had the best system ever, with trolley cars and buses and subways and interurban railroads. We wanted to live next to the freight yards or downwind of the smelter so we could walk to work. One million years of evolution culminated in the Long Island Railroad.

Then we were forced to abandon these good things. Against my will, I work where I chose, live where I chose and drive 22 miles each way, at my own time, over my route, at my speed, at the point of a gun.

This is something new. Here we have a man who does not understand history and so proposes to persuade *us* to repeat it. I am reminded of the days when I was a gullible schoolboy. The books were full of lessons about the sensible Europeans. *They* didn't have nasty, smelly motorcars; no, those rational folks over there rode bicycles. Then came prosperity expanding economies and incomes. There is a bicycle moldering in every backyard on the continent.

I believe, obviously, that we all value our personal mobility. None of us wants to let the conductor tell us when or where to get off. How, then, can we assume that everybody else longs to swap his car for a place in the commuter train?

Maybe they do. I wouldn't stop them for the world. When the train pulls out of the station, 80 sardined bridge players to a car, I will be on the freeway.

I plan to sell two of my three cars. There's a man in England who built the car I want. As I will no longer be hampered by traffic, I plan to buy it. It's a hillclimb Lola with a roadster body, an aluminum tube with a cycle fender at each wheel. Powered by a Traco Chevy. I don't mind the 22 miles now. Cruising at 150, it may well be the high point of my day. I hope to see you there, 'cause I doubt you're too keen on bridge yourself.

Allan Girdler

EDITOR

Be a sport.

BMW is the best sports sedan in the world. Driving one will give you a real kick—right in the small of your back, every time you tromp down on its accelerator.

The car responds eagerly, instantly. Like a racehorse that's been given its head. And it isn't just a sprinter, either. The new 6-cylinder models will cruise all day at 120 mph.

And hold the road? At the Bavarian Motor Works, we build these cars for high-speed touring in the Alps. Which is one reason why automotive experts will tell you there is no better suspension than BMW's in any car anywhere.

Put these things together with tasteful, quietly-stated elegance and comfort and you have the BMW idea: a practical family sedan that's a mind-bending joy to drive.

But the fun is finding out for yourself. If you want to get a real kick out of driving, stop in at your BMW dealer's—and give yourself a sporting chance.

A complete range of models priced from $3,015 to $8,453 P.O.E. New York. U.S. Importer: **Hoffman Motors Corporation,** 375 Park Avenue, New York, N. Y., 1862 S. La Cienega Boulevard, Los Angeles, California. Dealers Coast to Coast. Advantageous European Delivery Program. Write for free brochure No. **CL 7**

Bavarian Motor Works

BMW

CAR LIFE FORUM

For free exchange of information and comments of interest to car enthusiasts

CALIFORNIA CHALLENGED

EDITOR: Before you hand California the leather medal as the Restriction Capital of the world and give full credit to Mr. Wanderer's paean of praise for New York's lack of restriction, you should note that New York has a dandy little feature which I think is unique among the states. The state speed limit (except on turnpikes, etc.) is 50 mph. BUT just about every turn—great or small, tight or gentle—in just about every road is marked with its own separate, reduced speed limit. In general, they run 10 to 20 mph slower than a retired schoolmarm would take the turn.

So far I have not noted any enforcement of this potential treasury augmenter but whenever the state or the municipality becomes sufficiently hard up, the little black tripod with the big round "eye" on it will become a standard decoration on every short turn around a concealing hill. And unlike the flat states out West, New York is full of blind turns. Your little black spotter box won't work around that sort of turn.

A. W. Miller
New York, New York

OK, there is no worse state. All the states have their own little laws. They are all different, and most of them are out of date. The states get together only to resist federal control. (We're suspicious of Big Brother, too, but one big set of dumb rules would be easier to cope with than 50.)

A GROUP OF TWO

EDITOR: Why does your Comparator list the Corvette ZQ3 as Ponycars and not Supercars? And how was this decision made?

Charles Peterson
Minneapolis, Minn.

The decision was made arbitrarily. The Corvettes, indeed all Corvettes, are sports cars. We don't test sports cars as a rule, so we have no section for them in the Comparator. But we think of the Ponycars as sports cars, so that's where the Corvettes went.

ROGER'S SLIDE RULE

EDITOR: As a long time subscriber to CAR LIFE I follow the road tests quite closely. Also, as a long time Buick Gran Sport driver I read with considerable interest Roger Huntington's remark that Stage I Buicks do not even measure up to their advertised horsepower as well as Pontiac's 455 (True Power, May issue).

May I call your attention to CAR LIFE's Road Test Comparator? In the 1/4 mile the Stage I 455 outran both the 428 Cobra and the 455 cubic inch GTO. Both of these engines are rated by you at 30 horspower over the Buick. The Olds W-30 with a whopping 65 more "true" horsepower outran the Stage I by only 24 one hundredths of a second. A little tuning could easily make the difference here.

Even though Buick's 455 has a larger bore than stroke, you state that its stroke (the length of it) kills it on top end. In the Road Test Comparator the Buick Stage I has a faster top speed than any of the cars in the super car category except the Hemi Charger 500, which is aerodynamically designed.

David Willbur, Jr.
Ft. Pierce, Fla.

Leave Roger's slide rule alone. The article wasn't based solely on the Road Test Comparator; rather, Huntington used performance figures from the factories, the magazines and other sources, then averaged them together.

THE FABULOUS HORNET

EDITOR: Thanks for the long-overdue recognition of the fabulous Hudson Hornet. In its hey-day it was without peer, but many other marques have faced a similar dismal fate.

How about further stories on the Hudson—such as the fantastic records made by the Terraplane?

Burton E. Nichols
Derry, N. H.

Further stories on the more recent classic performance cars are in the works. Coming up in the August issue: the fabled Chrysler 300.

WHAT THIS COUNTRY NEEDS:

EDITOR: What this country needs is a club of Z-28 owners.

Owners of Z-28 Camaros are invited to send me their name, address, phone number and any other information they choose to include.

If there is enough interest maybe we

can get something going.

James H. Pastorius
Rockdale Rd RD No. 6
Butler, Pa. 16001

Happy to pass the word along. There are some Corvette clubs that accept Camaros, but most of them don't. And why should the Javelin and Mustang clubs be the only ones to get to stage parade laps at the Trans-Am races?

THE LITTLE GUY

EDITOR: Last year at the National Hot Rod Assn. World Finals Wally Parks told the racers that by the start of the 1972 NHRA season drag racing will be completely professional with only three classes remaining: top fuel, funny car, and pro stock classes.

Where will this leave the little guy in drag racing?

Mark Smyth
Ontario, Can.

Wally Parks replies: "The day will never come when NHRA will lose its interest in the little guy."

Parks was most upset to hear this rumor. He can't recall saying anything like it, doesn't know where you picked it up, and doesn't agree with any part of it.

Now. The television coverage may become something like the situation you mention. The TV people and the general public don't understand class racing, be it road course or dragstrip. And the stock-class cars aren't as thrilling to watch.

But drag racing is a participation sport. Parks pledges it will remain so. We have competed incognito in the stock classes, been well treated, and we'll endorse Parks' view.

VALUE FOR MONEY

EDITOR: For about $7500 you can buy a Cadillac, Imperial, or Lincoln, each of which is guaranteed for 12,000 miles.

For about $2500 you can buy a Chevy II, Valiant, or Falcon, each of which is guaranteed for 12,000 miles.

It seems that the auto companies are implying in their guarantees that you may spend $5000 extra for a car, if you care to, but don't expect any more in the way of quality or trouble free operation.

J. J. McBride
Garber, Iowa

Equating the warranty and the price just won't work. Mercedes-Benz and Volkswagen have the same price and warranty differential as do the examples mentioned, so it isn't only Detroit.

It's people. You will get more handwork in a Cadillac than in a Chevrolet, the finish will be better, etc. Whether it's worth it is up to you. But all the major components in any car are made to go well beyond the 12,000 miles or 12 months. The factory could back its product. But it can't afford the fights and confusion, the claims and counter-claims, the swindles and denials from all the parties involved. If customers, dealer and factory were all reasonable, the warranty could be for 100,000 miles. If we were reasonable, we wouldn't need warranties at all. A handshake would be all it took. We are not reasonable.

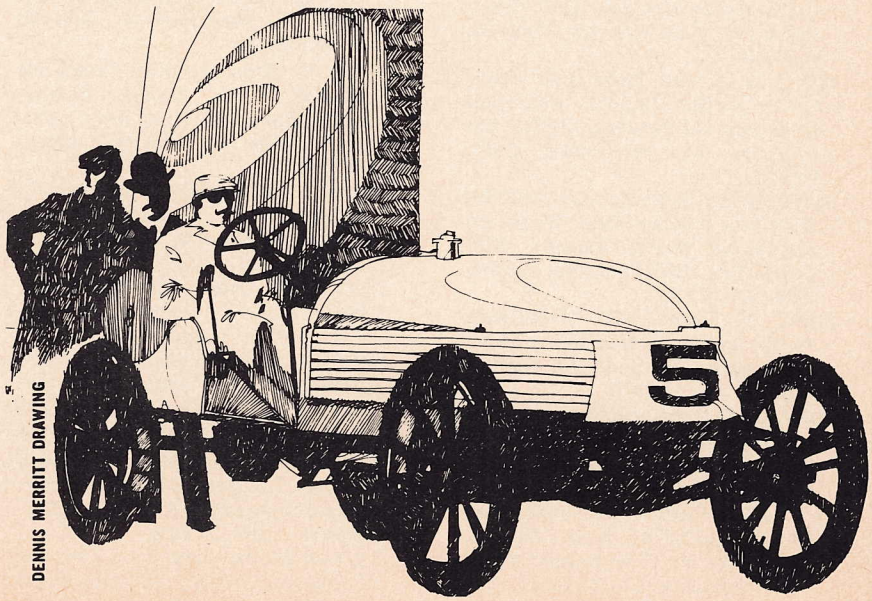
IF YOU DON'T LIKE IT . . .

EDITOR: I have just finished reading your editorial in the May '70 issue of CAR LIFE. You knock the insurance companies for what you consider to be bias against young people.

Now, I have had my share of disagreements with insurance companies, but I find your complaints to be childish. If you really feel that the insurance companies are unjust to "young" drivers who drive "hot" cars, then there must be a world of business waiting to be had by an enterprising young man of your caliber who will start up an insurance company catering to their wants and needs.

James G. Litherland
Dallas, Texas

Nice little debating trick you have there. When you can't win on the question, put your opponent on the defensive by posing an unrelated problem. You would say that every person who doesn't agree with the editor has a moral obligation to start his ▶

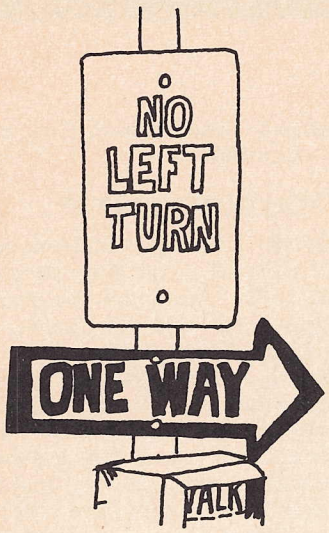


DENNIS MERRITT DRAWING

FORUM
continued

own magazine, eh?

But the question is one of guilt by involuntary association. The young driver is required by law, in most states, to buy insurance. If it is childish to say it isn't fair for the insurance companies to charge the young driver on the basis of his age or car, rather than his record, the editor is a child. And happy to be one.



BRAD McMAHON DRAWING

ACTION LINE USER

EDITOR: Thank you for your prompt and courteous reply to my problem of the Mercedes that refused to go slowly. You appear to have arrived at the correct solution.

Needless to say, I shall be an appreciative reader of CAR LIFE from now on.

Lt. Col. J. C. Dunfield
Oromolto, N. B., Canada

A STREET RACER SPEAKS

EDITOR: I must congratulate you on your unbiased and factual report. You told it exactly how it is. Your photography was great. Keep up the honest reporting.

I'm a member of the L.A. Racers myself now serving in Vietnam. I am an organizer myself and I wear the flag on my arm. I'm one of two Air Force organizers. When home I am also on our Race Committee and I work the Shut Down area at the races.

AlC Robert Beck
Cam Ranh Bay, South Vietnam

DATA PANEL

EDITOR: I think your data panels for the road tests are almost perfect, with one exception. That exception is price information. You include the list price and the price as tested, and the prices of a few of the main options. Yet, when adding together the price of the options and the list price, there is quite a difference from the "price as tested," about $900 difference.

Joseph Ganty
Philadelphia, Pa.

The new data panel has been expanded. Now we try to give the basic price, plus the price of whatever package is on the car, e.g., SS396, GTO, or whatever and the equipment included. Then there is a second list of non-package items such as air conditioning, radio, etc. So in the future, there won't be that unexplained difference.

CAR NUTS, UNITE!

EDITOR: In a recent issue of *High Performance News & Products*, a trade publication, I saw the idea of a "Hi Performance Lobby" proposed. Let's get some action on the subject.

CAR LIFE ACTION CALENDAR

JUNE 14 Mosport Park Can-Am (ACCUS). Write: Tickets, Cantrack Motor Racing, 1290 Ellesmere Rd., Scarborough, Ontario, Canada

JUNE 14 Golden State 400 (NASCAR). Write: Tickets, Riverside International Raceway, 22255 Eucalyptus St., Riverside, Calif. 92508

JUNE 19–20 12th Annual MOTAA Auto Fair & Swap Meet. Write: Information, Young Orsburn, 1925 Osage Dr., 1801 Eastgate, Blytheville, Ark. 72315

JUNE 21 Texas 400 (NASCAR). Write: Tickets, Texas International Speedway, Ramada Inn, College Station, Tex. 77840

JUNE 21 Bridgehampton Trans-Am (SCCA). Write: Tickets, Bridgehampton Race Circuit, 38 New St., Huntington, N.Y. 11743

JUNE 28 Le Circuit Mont Tremblant Can-Am (ACCUS). Write: Tickets, St. Jovite Mt. Tremblant, Canadian Motoring Consultants, 310 Victoria, Westmount, Quebec, Canada

JULY 4 Firecracker 400 (NASCAR). Write: Tickets, Daytona International Speedway, P.O. Bin K, Daytona Beach, Fla. 32015

JULY 4 National Championship Race (SCCA). Write: Tickets, Lime Rock Park Co., P.O. Box 441, Lakeville, Conn. 06039

JULY 5 Irish Hills 200-mile Stock Car Race (USAC). Write: Tickets, Michigan International Speedway, 2990 W. Grand Blvd., Detroit, Mich. 48202

JULY 5 Donnybrooke Trans-Am (SCCA). Write: Tickets, Donnybrook Speedway, c/o Jerry Johnson, Route 6, Brainerd, Minn. 56401

JULY 12 Watkins Glen Can-Am (ACCUS). Write: Tickets, Watkins Glen Race Course, Watkins Glen, N.Y. 14891

JULY 12 Northern 300 (NASCAR). Write: Tickets, Trenton Speedway, P.O. 2118, Trenton, N.J. 08607

JULY 12 200-Mile Stock Car Race (USAC). Write: Tickets, Wisconsin Automobile Raceway Inc., 1200 S. First St., Milwaukee, Wisc. 53204

JULY 19 Volunteer 250 (NASCAR). Write: Tickets, Bristol International Speedway, P.O. Box 3029, Bristol, Tenn. 37622

JULY 19 Elkhart Lake Road America Trans-Am. Write: Tickets, Road America, Elkhart Lake, Wisc. 53020

JULY 19 Bryar Trans-Am (SCCA). Write: Tickets, Keith Bryar, Bryar Motorsport Park, Rt. 106, Loudon, N.H. 03246

JULY 25 Nashville 250 (NASCAR). Fairgrounds Speedways, Nashville, Tenn.

JULY 26 Edmonton Can-Am (ACCUS). Write: Tickets, Edmonton Speedway Park, Chateau Lacombe, Edmonton, Alberta, Canada

JULY 31–AUG. 2 Grand American Championship (AHRA). Write: Tickets, Minneapolis International Raceway, 546 Endicott Bldg., St. Paul, Minn. 55101

AUG. 1–2 Championship Car 200-mile race (USAC). Write: Tickets, Dallas International Motor Speedway, P.O. Box 34410, Dallas, Tex. 75234

AUG. 2 Le Circuit Mont Tremblant (SCCA). Write: Tickets, St. Jovite Mt. Tremblant, Canadian Motoring Consultants, 310 Victoria, Westmount, Quebec, Canada

Dates appear to be firm, but CAR LIFE *cannot be responsible for changes. We've included the addresses of many race courses so you can write for ticket and grandstand seat information. Send self-addressed stamped envelope.*

Surely members of the automotive press can provide the spokesmen and polish for such a venture. SEMA could provide the technical assistance. Maybe one of the straighter thinking insurance companies would supply statistical and tabulated data. The major racing organizations and track owners can undoubtedly supply help in all three areas. You have all the talent, now put it to use.

Even though the automotive manufacturers will gain a lot from this battle, I personally feel that they will lend little support. Maybe someone from Detroit (or Kenosha) is not afraid to stand up and be counted, but we little guys haven't seen or heard from them yet.

If we don't get a movement started, CAR LIFE's road tests will be about as exciting as those published by *Consumer's Report* and Hurst will be making T-handle billy clubs for the highway patrol. Let's get going and save the sport, the industry, and a helluva good time for a few million people.

John S. Kennedy Jr.
Aurora, Ohio

This is a good idea–it has been suggested before and come to naught. But perhaps now– with the hot breath of reformers on us, all car fans can get together.

There is at this moment just such a group trying to organize. It's not simply performance fans, it's for all of us who like cars. The name is Motorists United.

How can you help? On page 37, you will find an ad for Motorists United, with a coupon. This is a try at assessing the number of people who will join such a pressure group. Don't send money now, just clip the coupon and send it in.

If the response is numbered in the tens of thousands, the group will become a reality. We will begin to fight back. If we don't put it together now, we may not have another chance. If YOU don't send that coupon, you have only yourself to blame when mass transit becomes a mandatory option.

THE CHARGER BARRED

EDITOR: I enjoyed your test of the Charger 440R/T very much. However, there is one statement that I can't let pass without comment. On page 52 of the May issue, in discussing the handling qualities of the car, the tester asks, "Why not hang an anti-roll bar on the back?" He then proceeds to answer his own question with an abrupt, "It wouldn't work."

I own a 1969 Charger 440R/T on which I've installed a competition diameter (220 lb./in. deflection) rear anti-

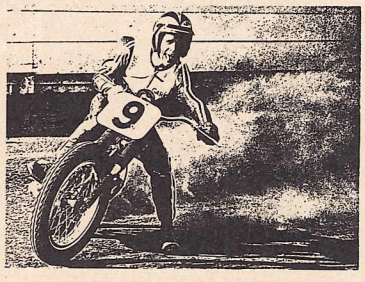
It's lonely, the National Trail. The miles are long, the pay is low. At the end, there is only one No. 1 plate. But many riders seek it, driving across the country in vans, towing trailers with beat-up cars, scrounging parts. Many of them, like Gary Nixon, do it, not for just the glory, but an opportunity to rise above the commonplace. It's their only choice.

RACER: THE STORY OF GARY NIXON

A NEW EXCITING BOOK BY JOE SCALZO

"'Racer" is more than Gary Nixon's story; it is an inside view of the entire racing scene. You'll meet the foxy Carroll Resweber, who could "psyche" riders beyond the brink of safety, Dick Hammer, whose one failing was an inability to tolerate anyone being in front of him. Bart Markel, who would stick his front wheel inside, even when he couldn't.

"Racer" is packed with exciting photographs of the past decade – of Nixon and the great riders he raced against. Joe Scalzo, a stylish and compelling journalist, has written a book that peeks behind the hero image to the fascinating, imperfect human beings in racing. You won't be able to put "Racer" down!



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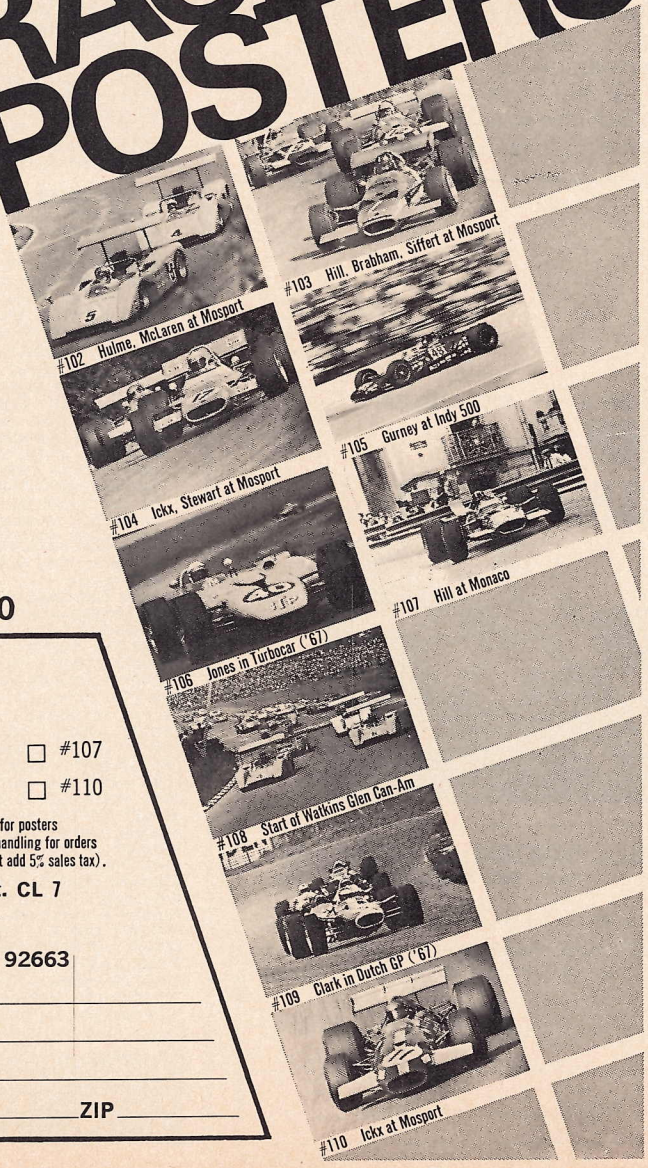
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FORUM

continued

sway bar. Cornering ability is simply remarkable. The improvement over stock must be felt to be appreciated. No change in riding qualities over any road surface is evident. Furthermore, there is absolutely no side skitter caused by too much roll resistance as predicted by the author. I'm sure that anyone contemplating the addition of a rear anti-sway bar to a Charger need not fear any adverse effects beyond a very slight increase in crosswind sensitivity.

Roger F. Hager
Evansville, Wisc.

We may have placed too much faith in the Dodge engineers, although they do seem to know how to design a suspension. They said that the rear springs are extra stout, to control the 440's torque, and that increasing rear roll resistance beyond this would hurt rough-road handling and could make the car overly sensitive.

We do feel that initial understeer is better, for enthusiast and average driver alike. But the rear anti-roll bar works for you, so it might be just the thing for other Charger owners.

LIGHTS-OUT TIME

EDITOR: I am very impressed by the imposing array of lights on Mr. Beaudry's Corvair (Forum, in May), and I'd like to follow his example. However, the local Highway Patrol informs me that it is a violation to have lights of an unapproved type mounted—merely mounted—on a car used on the highway. How does Mr. Beaudry get away with it?

Victor Lilley
Irvine, Calif.

Just lucky, we guess. And so is CAR LIFE. When we first installed high-performance fog and driving lights on a staff-owned car, we were told locally that the driving light was unapproved, but that it could be on the car if it was covered up.

We took your question to the chief engineer of the California Highway Patrol. He is both knowledgeable and in favor of better lights, when the law allows them.

We were in the wrong. California law prohibits the installation of unapproved lights. They can be covered, or even unwired, and they are still against the law. We, Mr. Beaudry, and scores of other Californians are not being prosecuted because, as the engineer says, "It depends on who happens to see them."

If you ever wanted to pass in a Porsche, see a Citroen dealer. He'll show you what it's like.

You're out on the open road. You get the itch to pass a fellow traveler creeping along at 50 mph. Do it in a Porsche 912 and your friend will be admiring your rear bumper in 6.4 seconds.

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Surprised? Here's another one: This time you want to get something at the end of a 1/4 mile stretch. And fast. In a Porsche 912 you can arrive at your desire 18.2 seconds from the time your foot says, "Go"!

A Citroen? A couple of seconds longer.

We haven't told you these things just to impress you with our speed. (Cars do not become great cars just because they go zoooooom.)

Citroen has some other things in common with a Porsche 912, too: like the same type of precision rack-and-pinion steering and a lower center of gravity. Which means you control your Citroen, your Citroen doesn't control you. A splendid quality to have. Especially around curves.

Citroen even has some things not in common with a Porsche 912: like not just carrying two people. (Nobody has just one friend.) And making sure your ride is smooth by using the world's only hydropneumatic suspension system.

And not to slight our other friends of the open road, we might add that a Citroen has the braking power of a Ferrari 330 and the gas economy of a VW bug.

For a chance to find out for yourself what a Citroen can and can't do, drive over to your nearest dealer. And don't forget to ask him to show you what it's like to pass in a Porsche. (He may even show you what it's like to pass a Porsche.)

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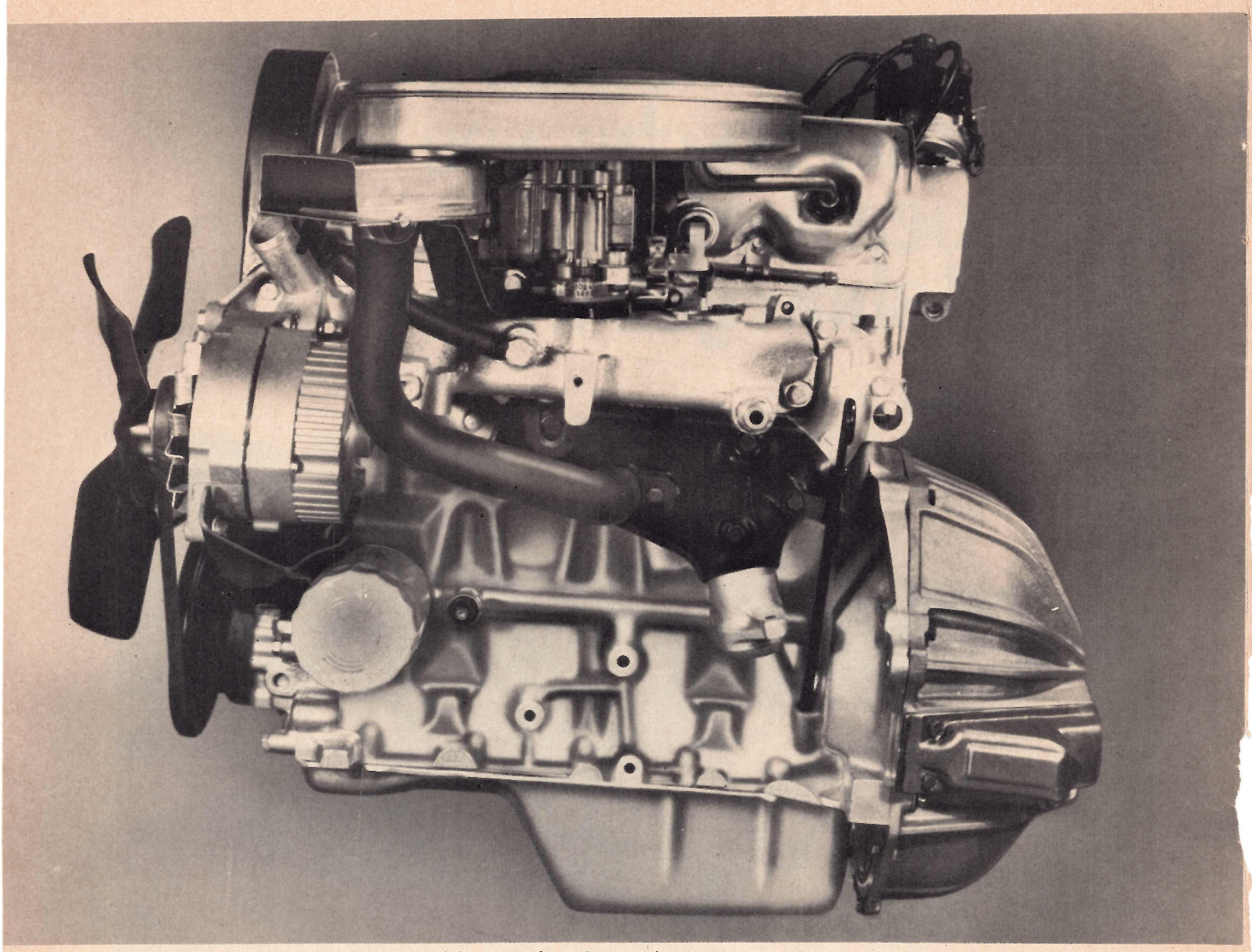


Left side view of engine shows hot air stove and thermostat for carburetor air.

THE NEXT GENERATION

Chevy's coming small car will have an aluminum block and single overhead cam. What a good way to get our attention!

BY JOHN R. BOND

CHEVROLET BEGAN an advertising campaign in April that started the longest, most agonizing wait in automotive history. (Unless you're still waiting on the Lear Steam Car.) From April until announcement time late in August we'll be fed tidbits of information on the new small car, code name XP-887.

Very complete details of the new engine for the XP-887 engine were released at the New York International auto show where a sample engine was publicly displayed for the first time.

A quick description of this engine includes four cylinders in line, 3.50 x 3.625 in. bore and stroke, 139.5 cid, 90 horsepower, a die-cast aluminum cylinder block and a cast-iron cylinder head with an overhead camshaft.

The outstanding innovation engineered by Chevrolet for this engine is the aluminum block with no cylinder sleeves. No one has ever done this

before on a commercial basis except by using an expensive porous chrome plating treatment of the bores.

The block is die-cast in metal molds. This is not new; American Motors had such an engine in production back in 1961, with cast iron sleeves in the bores. Currently two French engines—the Peugot 204 and the Renault R-16—have die-cast aluminum blocks with iron sleeves.

But Chevrolet dispenses with sleeves by using a special high-silicon aluminum alloy, which gives relatively hard surfaces. The pistons are aluminum with a very thin plated iron surface to provide the necessary rubbing compatibility. (See special section on Acurad, Silicon, and the Iron Piston.) This block weighs 47 lb. without the five cast-iron bearing caps which are employed to hold main bearing clearances constant over a wide temperature range. For rigidity the crankcase split is 2.5 in. below the crank centerline and the block stands 9.015 in. above that center and is 18.40 in. long overall. Bore centers are 4.0 in. apart so there is some room for a future bore increase.

Because of the heat flow characteristics of aluminum, the cylinder bores can be siamesed and full length water jackets are not necessary. These expedients add further to overall rigidity (always a problem with aluminum blocks) and also prevent too rapid heat transfer to the cooling system. Otherwise the radiator would have to be larger than normal.

In order to achieve water space around the bores (except at the siamesed junction) the top deck must be left open so that the water jacket cores or molds can be withdrawn after the molten aluminum has solidified. Spaces over and around the main bearings are also "cored" from the outside to give uniform wall thicknesses throughout.

The cylinder head is cast iron, which may sound surprising but makes a lot of sense. It weighs 60 lb. or 13 lb. more than the block. The inherent high stiffness of iron coupled with an overall height of 8.6 in. adds considerably to the overall rigidity of the structure. This casting includes the five camshaft bearings, rather than carrying them separately in an aluminum casting as was done on the SOHC Pontiac. Iron can be cast with thinner walls than aluminum and this means more space for water-jacketing around the valves and ports. No valve seat inserts are necessary which allows larger valves operating at lower temperatures than they could with inserts. Finally iron heads show better thermal efficiency than aluminum, whose rapid head conduction is more of a handicap than an advantage.

There are ten 7/16-14 head bolts and all are exposed and accessible. Combustion chambers are fully open and almost hemispherical. There is no quench area, for low emission reasons.

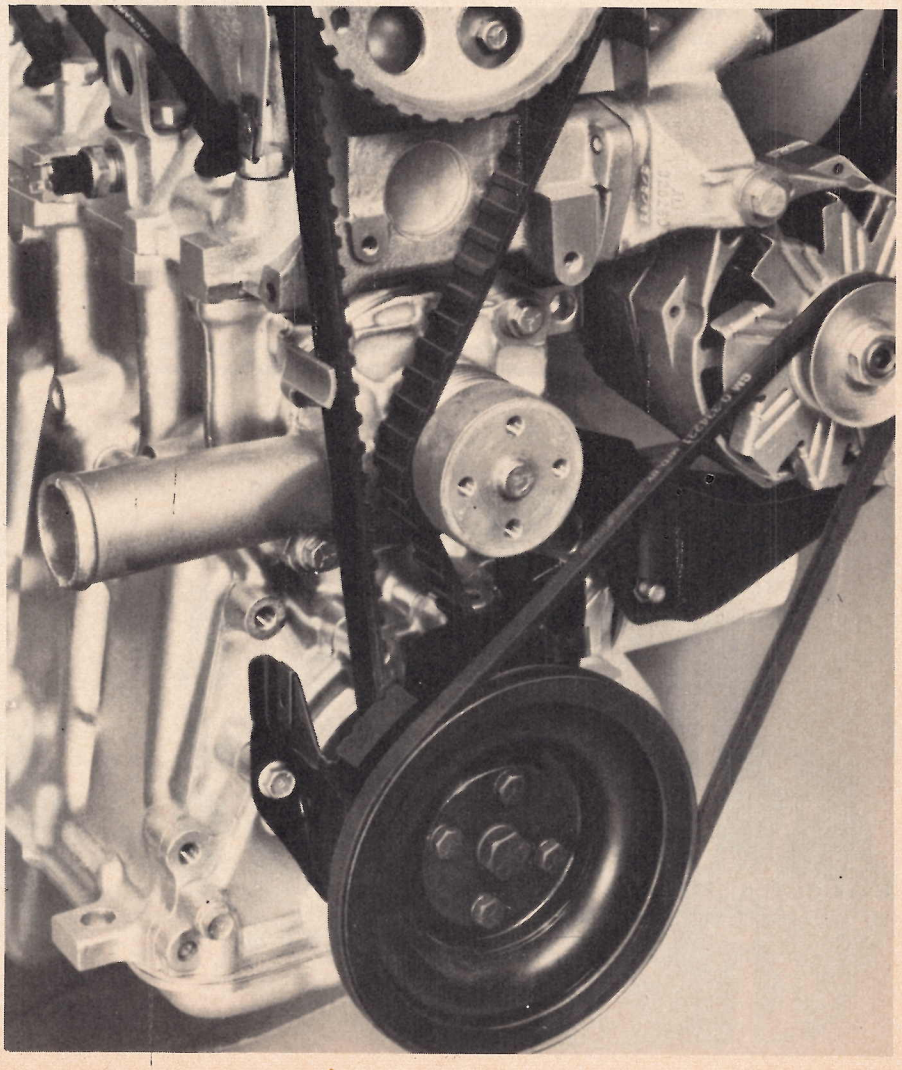
Valves are in line but their heads are about 0.16-in. off the bore center, to allow the spark plugs to be moved closer to the center of combustion volume. The valve stems are inclined at an angle of 4 degrees to allow the combustion chamber shape proven best for smoothness and knock-free qualities.

The valves are not overly large for the bore size; the intake at 1.60-in. is somewhat less than half the cylinder bore dimension (actually 46.3%) and the exhausts have a nominal head diameter of 1.375 in. The decision obviously was in favor of plenty of room for good cooling and minimum valve seat distortion.

The use of an overhead camshaft may seem a bit surprising in view of the choice of a rather large piston displacement of 2387 cc vs. 1584 cc of its prime target, the VW. But while the present peak power speed of 5000 rpm could easily be handled with push rods and rockers, the design goal allows 7200 rpm before valve float. More important (for the immediate future) the overhead cam allows much weaker valve springs than rockers do. Valve seat life is going to be a severe problem in 1971 with unleaded fuel. Lead serves as a lubricant, and protects the valve seats. Without this protection, a valve seat subjected to the hammering of a valve propelled by stiff springs won't last long. The lighter valve springs allowed by the overhead camshaft will reduce the pressure—and the wear—on the valve seats. Not incidentally, the valves and piston head are so designed that there will be no contact at any time, even if the belt breaks; an unusual safety feature.

Unlike the late Pontiac SOHC engine the XP-887 powerplant has no hydraulic constant clearance device and no rocker fingers. The valves are actuated by a simple direct-acting piston-type tappet with a diameter of 1.4345 in. and a length of 1.56 in. The upper ▶

The timing drive with cover and fan removed.



THE NEXT GENERATION

portion of this tappet has a unique and very simple adjustment scheme developed by GM and used for two years on the corporation's Vauxhall Viva made in England.

A 5/16-32 Allen-head screw is placed transversely through the tappet body at an angle of 5.5 degrees. This screw has a flat spot on one side which contacts the valve stem tip. One turn of the screw changes the valve clearance by 0.003 in. This may not seem like a very accurate adjustment but the cams have unusually long take-up ramps and nominal clearance is specified at 0.015 in. for intakes, 0.030 in. for exhausts, plus or minus 0.003 in., of course. Lobe lift is 0.4199 for intakes, 0.4302 for exhausts with durations of 236 degrees and 227 degrees respectively. We assume actual valve lift is reduced by the specified clearance and that the duration figures are taken at actual running clearance. However, all these figures are subject to last minute changes as are the horsepower and torque figures which were given to us as "tentative and subject to change when enough production engines have been built and tested to establish a reliable average." These figures were obtained by us early in April and are:

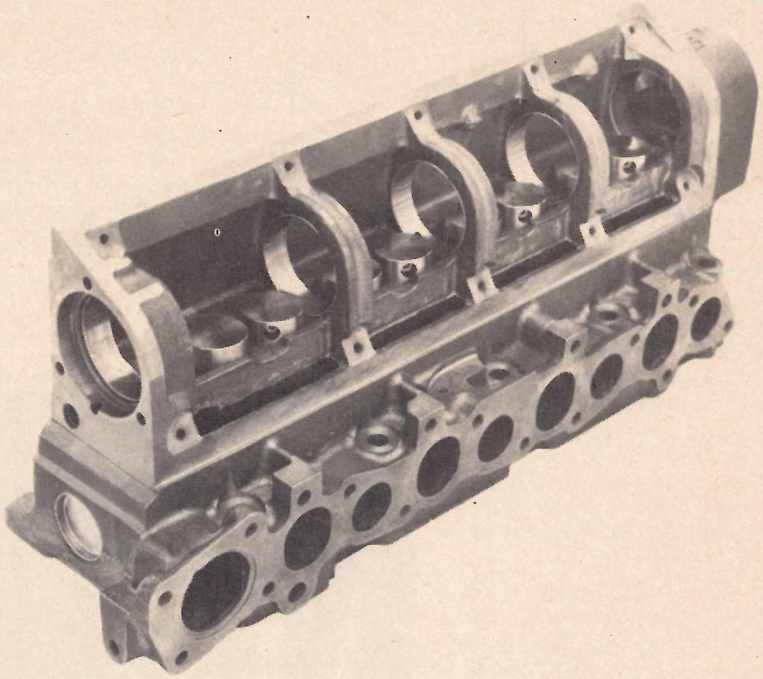
Carburetor	bhp @ rpm	Torque @ rpm
1-bbl.--1 7/16	90 @ 4400	136 @ 2400
2-bbl.--1 7/16	110 @ 5000	138 @ 3200

Our guess is that the 2-barrel carburetor model has, or will have, a different camshaft from the single barrel model in view of the large difference in peak rpm for both power and torque. By August we'll know.

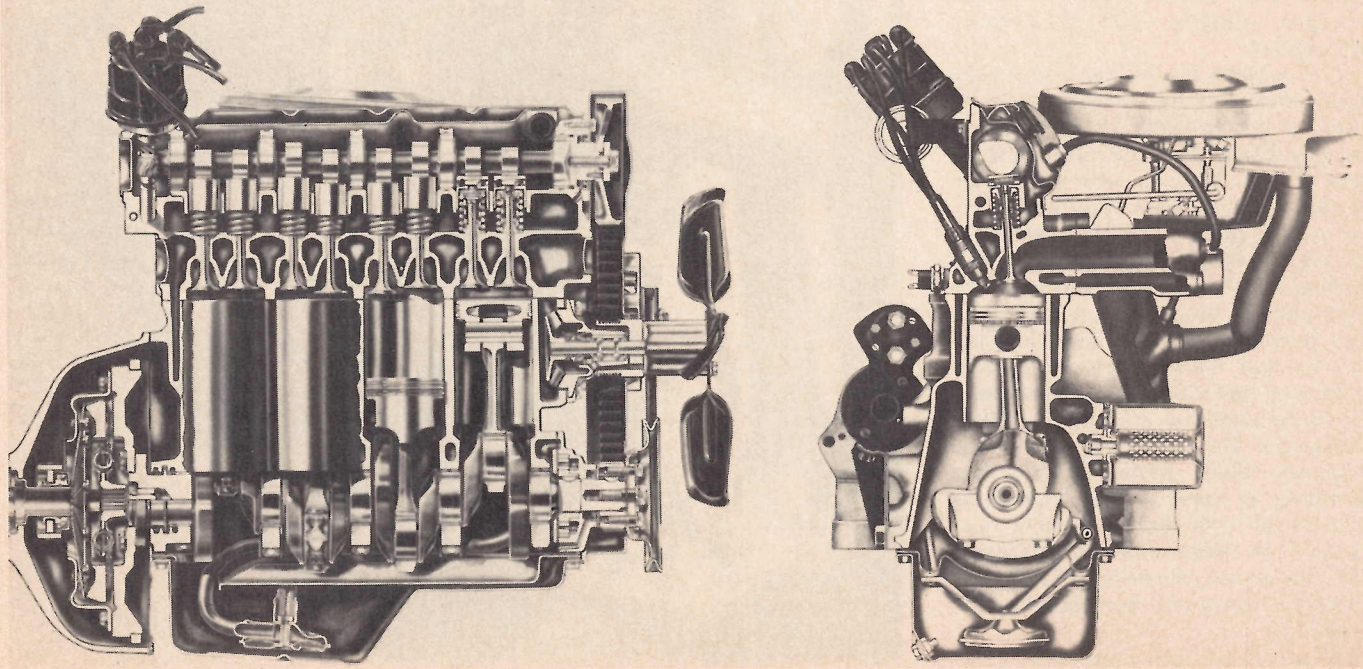
Reverting to the camshaft, its 5 bearings are very large at 2.28 in. diameter and all are steel backed babbit lined. The cams, themselves, are exceptionally wide at a fraction under 3/4 in. (actually 0.74 in.).

As expected the cam drive is by a cog belt. The center-to-center length from crank to cam is a nominal 15-1/8 in. and the belt has 91 teeth with a pitch of 1/2 in. giving a pitch length of 45.5 in. Belt width is 1.0 in. The crank pulley is sintered nodular iron with 18 teeth, the cam pulley is gray iron with 36 teeth. The tension side of this belt is used to wrap to one side of the fan and water pump pulley with friction drive off the back side of the belt. Thus the fan and

Cast iron head, with adjustable tappets in place. The water outlet is at the far left; intake ports are oval, exhausts round.



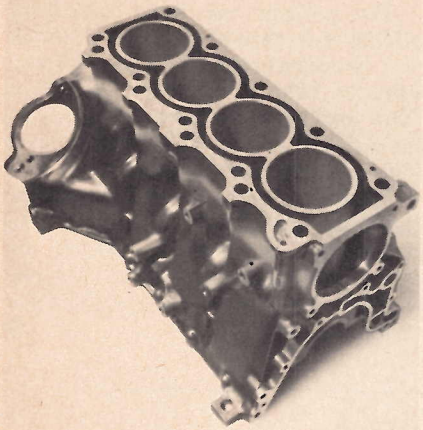
Cross section views of the XP-887 engine with 8 in. clutch, oil pump on nose of crankshaft and cog-belt cam drive. The end view shows the intake ports with water jacketed manifold.



water pump rotate counterclockwise or backwards from that of the crank and cam. The belt is enclosed at the front and sides by an easily removed cover.

The water pump pulley is 2.625 in. diameter and so turns at about 1.1 times crank speed. The pump housing is die-cast aluminum with a cast iron impeller. The assembly is attached to the block by four bolts and the holes in the pump body are slotted. Chevrolet engineers state that no belt stretch has been detected in all their test work and the slotted holes are there solely to allow for accurate factory adjustment with expected production tolerances.

The 47 lb. aluminum block with open top deck.

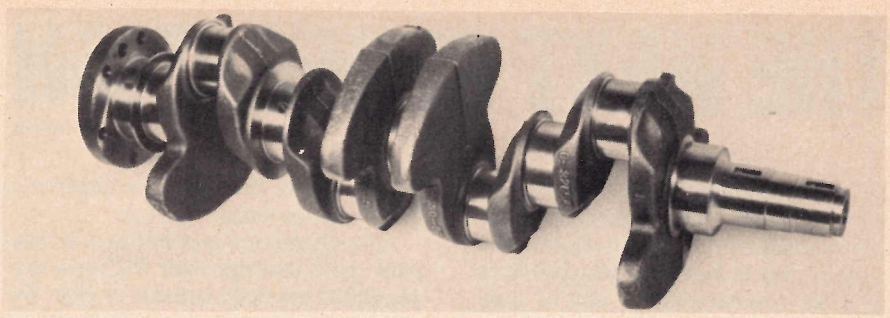


Manifolding of the XP-887 engine is somewhat unusual. For one thing all ports, both intake and exhaust are on one side. For another they chose the left side, adjacent to the steering column.

Finally, there is no hot spot of any kind. The valves and ports are arranged in an int., exh., int., exh., etc. sequence which is not new and was chosen to insure more uniform cooling throughout the length of the cylinder head. As a substitute for a hot-spot the carburetor air is drawn first through a sheet metal shield surrounding a section of the exhaust manifold. A thermostatically controlled valve flips this passage off when the temperature rises to a point where heated air is no longer desirable.

A die-cast aluminum water outlet and thermostat housing bolts to the side of the head at the far left-front corner. This casting also serves as the pivot anchor for the alternator which is driven by a separate V-belt at 2.7 times crank speed.

A double sheave pulley is applied when air conditioning is ordered. The A/C compressor units mounts low on the right hand side of the engine. The distributor is driven by helical gears at the rear of the camshaft and lies at an angle of 45 degrees. This location was chosen for ease of servicing and relative freedom from being soaked with water.



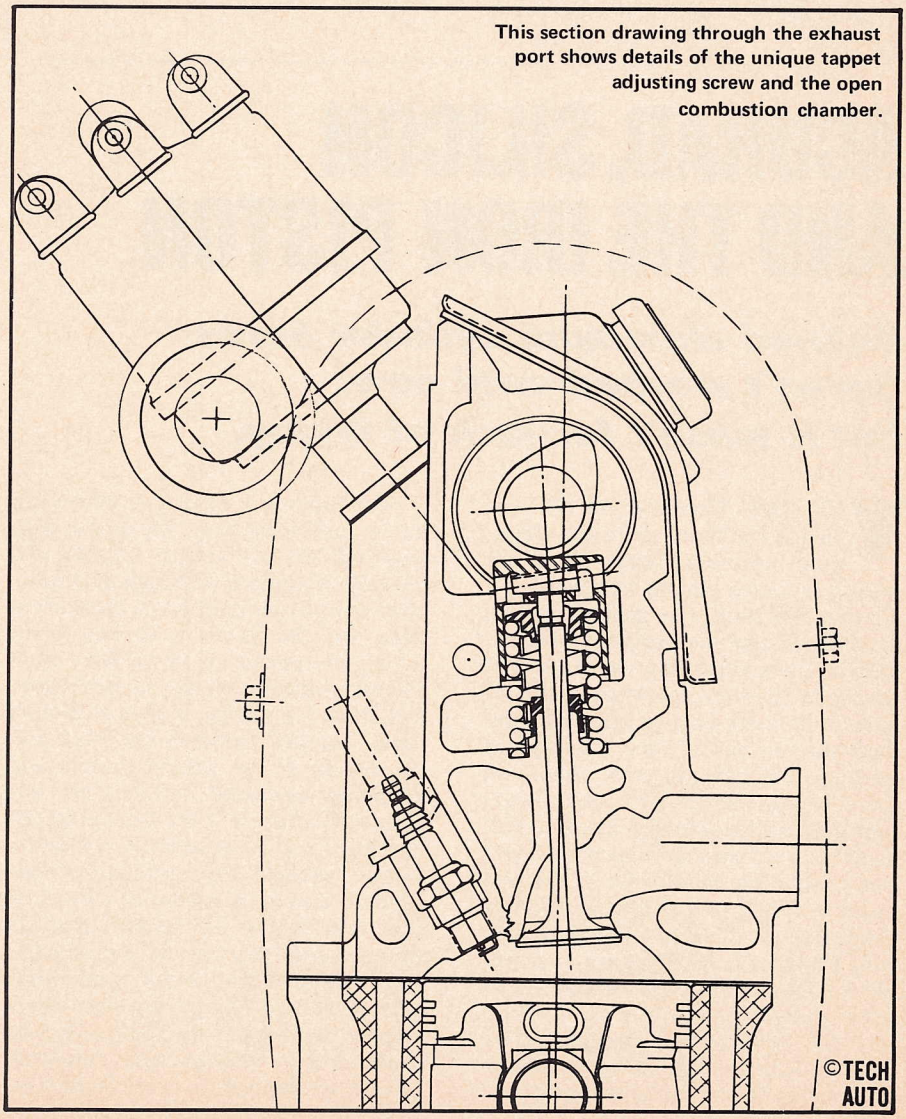
The cast 5-bearing crankshaft with four counterweights.

One usual accessory item is missing from this engine. There is no mechanical fuel pump. This supply need is taken care of by the relatively new AC electric pump mounted inside the gas tank. The unit and its location has many advantages and it works particularly well in conjunction with the soon-to-be-required anti-vapor-loss system.

A pressed steel oil pan holds four quarts. Lubrication is conventional except for the oil pump type and location. This pump is an internal-external gear type as more commonly used for automatic transmissions. The gears are driven off the nose of the crankshaft and enclosed by a separate aluminum die casting which also houses the pressure regulator valve and spring.

At the all important bottom-end there are five main bearings. These are 2.30 in. in diameter, the same as used by Chevrolet in its four, six, and smaller V-8's. Crankpins are also Chevrolet standard practice at 2.00 in. These dimensions give an overlap of 0.3375 in. despite the slightly under-square cylinder dimensions and a stroke a bit longer than the other engines mentioned. In- ▶

This section drawing through the exhaust port shows details of the unique tappet adjusting screw and the open combustion chamber.



THE NEXT GENERATION

continued

terestingly enough, there are no cored lightening holes in the crankshaft, probably because of the longish stroke. The crank is cast in modular iron and there are four counterweights, one at each end and a pair bracketing the most heavily loaded bearing in the middle.

Main bearing no. 3 carries the most load so it is not used to take thrust because the necessary flanges reduce the effective bearing area. Number 4 was chosen as it is still fairly close to the middle and so the overall differential expansion rates between iron and aluminum are negated. A thrust bearing at either end (as used on other Chev. engines) would tend to cause problems or require excessive end clearance at the rod bearings.

The connecting rods are essentially the tried and true drop forgings used in all Chevy 4, 6, and 8-cyl. engines except the big inchers. The center-to-center length is 5.705 in., the insert bearing is 2.00 x 0.980, the wrist pin diameter is 0.927 and the weight is 20 oz.

The pistons are conventional permanent mold castings with flat tops, slipper skirts and deep cutouts to clear the counterweights at bottom dead center. The unique feature here is the iron plating mentioned previously and described in detail under "Acurad, Silicon, and the Iron Piston."

The complete engine weighs 285 lb. or 330 lb. with flywheel, clutch and aluminum bell housing as used with manual transmission cars. All the above facts and figures came to us via Chevrolet's chief design engineer for the XP-887, Lloyd E. Reuss, to whom we are much indebted. The opinions and reasoning behind certain features are expressly our own.

Other details about the car itself will be reported upon as fast as the information is divulged. There are a few things we think we know. For one it's a conventional car with engine in front and rear wheel drive with a conventional axle. For another, the engine speed (rpm/mile) will be extraordinarily low, an axle ratio of close to 2.5:1 has been rumored. There will be three transmission choices, an automatic, a 3-speed manual and a 4-speed manual, we think. We know there will be four body styles: "1) a sporty little hatchback coupe, 2) a sturdy little 2-door sedan, 3) a slick little station wagon, 4) a solid little panel truck." The quotes are from a Chevrolet press release. No details were given, but we'd guess the hatchback coupe to be something like the Gremlin or MGB-GT.

But perhaps the most interesting official statement of all comes from GM vice president and Chevrolet general manager John Z. DeLorean who said "Our small car, currently code named the XP-887—will be the finest car ever built in America at any price."

That is a very strong statement. Certainly the XP-887 is going to be a remarkable car, one that people are talking and speculating about now, one that will continue to be talked about for years to come. ■

ACURAD, SILICON AND THE IRON PISTON

Unlined aluminum cylinder bores haven't worked until now, but it wasn't for lack of trying.

THE NEW Chevrolet XP-887 engine is the first ever to use aluminum cylinder bores with no special liners or plating treatment. To do this has been the goal of engine designers all over the world for 40 years. Efforts along these lines were stepped up about 10 years ago when a rash of aluminum block engines appeared and then quietly faded away (except in Europe). The advantages of aluminum for this application were and always have been well recognized. But the cold, hard facts of business economics could not justify the added cost of inserted liners or slow and expensive plating methods. And it wasn't just the added cost. Cylinder liners are notorious trouble-makers; the dry types, whether pressed or cast-in, tend to work loose from repeated heating and cooling cycles. Once loose, the lack of good contact impairs heat flow, the liner runs hotter and a host of troubles appear.

Wet liners are equally troublesome but in a different way. The special seals required are not always reliable and servicing of engines with high mileage or after years of use is difficult. More often than not the sleeve is broken when trying to remove it. A seldom mentioned problem with wet sleeves is bore distortion. A flange is almost always used, clamped between the head and the block. If the sealing gaskets and adjoining machined surfaces are not absolutely flat, or if the head bolts are tightened out of sequence or without a torque wrench, the resultant uneven squeeze causes the sleeve to distort or cock near the top. The result is usually a seized piston. This distortion problem is bad with cast iron blocks and worse with aluminum. Many heavy duty diesel engines no longer use sleeves—among them Ford, Perkins and Leyland. (These all happen to come from England where sleeves have long been popular.) Now we have a major breakthrough as a result of co-operative engineering by GM Research, Chevrolet, Reynolds Metals and Alcoa.

If iron pistons running in iron cylinders were satisfactory, then why not aluminum to aluminum? Cross in England thought so in the early thirties, but he quickly found it would not work, as did several other experimenters. However, in 1936, Cross showed a single-cylinder, rotary-valve motorcycle engine which he claimed was workable with the elusive combination. His aluminum piston incorporated machined grooves at both ends so that cast iron rings placed therein would project a few "thou" beyond the skirt diameter and so provide a cast iron to aluminum rubbing surface which was similar to a conventional engine except reversed. It worked to some extent, but still didn't last long enough for practical applications.

About 1955, both Reynolds and Alcoa developed and tested aluminum block engines with the cylinder surfaces treated by a metal spraying process. All sorts of materials were tried, and with some success. But apparently it didn't save much in cost as compared to conventional iron liners.

Chrome plating of cylinder bores or sleeves by the Van der Horst porous process has had some usage and fair success though two users (Porsche and Rolls-Royce) have abandoned it. The problem seems to be very high cost and

an occasional failure—the chrome sometimes peels off.

Still another hard surface treatment for aluminum is anodizing. This is an electrolytic process which puts a very hard surface on the part. An early automotive application was for pistons on the 1935 La Salle straight-8. The surface is not a "plate" and the hardened area is only one or two ten thousandths of an inch thick. Many attempts have been made to produce an anodized surface that is thicker – up to 0.003 in. But it's slow and expensive. No one uses it for pistons anymore because a tin plate does almost as good a job for less money.

The Chevrolet idea is similar to Cross's, but goes two steps further. The first step is that the aluminum cylinder is a high silicon alloy. A common Al-Si alloy has about 7% silicon and is the well known "Lo-Ex" material so widely used for pistons. Silicon up to 11% is sometimes used but it is harder to machine and represents the top limit for good dispersion with normal pour-casting techniques. Above 11% silicon we run into trouble—it's like a saturated solution where the foreign alloying element won't behave.

The Super-Silicon alloy (our term) used for the XP-887 block has a content of 17% Si and the castings are formed in steel dies by GM's own Acurad process, first used on the Corvair engine. This process was developed and improved from certain German techniques and patented by GM sometime prior to 1960. Shortly thereafter GM announced that the Acurad process was available to anyone and no licensing fees would be exacted.

With Acurad the basic difference from normal die-casting practice is that the plunger which pressurizes the molten metal is a two-stage affair. A large piston pushes the metal into the mold very quickly so that the surplus silicon doesn't have a chance to segregate. A second small plunger gives the final push and the necessary high pressure to insure sound, bubble-free castings. No other known casting process will give satisfactorily consistent, well dispersed castings with high silicon aluminum.

The Acurad cast cylinder block has very hard surfaces and Chevrolet developed a special etching process which, in effect, removes a tiny fraction of the pure aluminum and leaves the hard silicon particles prominent. This is done after machining the bores, of course. The actual surface, or roughness, is also carefully and accurately controlled by optical profilometers.

The second half of the secret is the piston surface—strangely enough the rings necessary are not un-standard. The XP-887 piston is a conventional aluminum alloy with about 7% silicon. But it is plated four times, each time with a different metal.

The first plate, described as a flash-plate, is with zinc. Next comes a flash-plate of copper. The third plating operation is the thickest and the most important, the first two merely provide a proper bond. This is iron and its thickness is still only 0.0007 inch thick. Over this comes the fourth and last, a flash-plate of tin which has been widely used previously on iron and aluminum pistons because it greatly facilitates engine break-in.

The total thickness of all four platings is 0.0010, or twice that measured as a change in piston diameter. So the three flash-platings total only 0.0003 inch, or about one ten-thousandth of an inch each. Obviously it's the iron plating that solved the problem, and engine life is generally equal and often better than with the conventional combination. All four companies mentioned earlier have logged millions of miles and dyno test hours on silicon to iron combinations and now we can have the cost saving advantages of light aluminum engines at no higher initial cost. That's what automotive engineering is all about. ■

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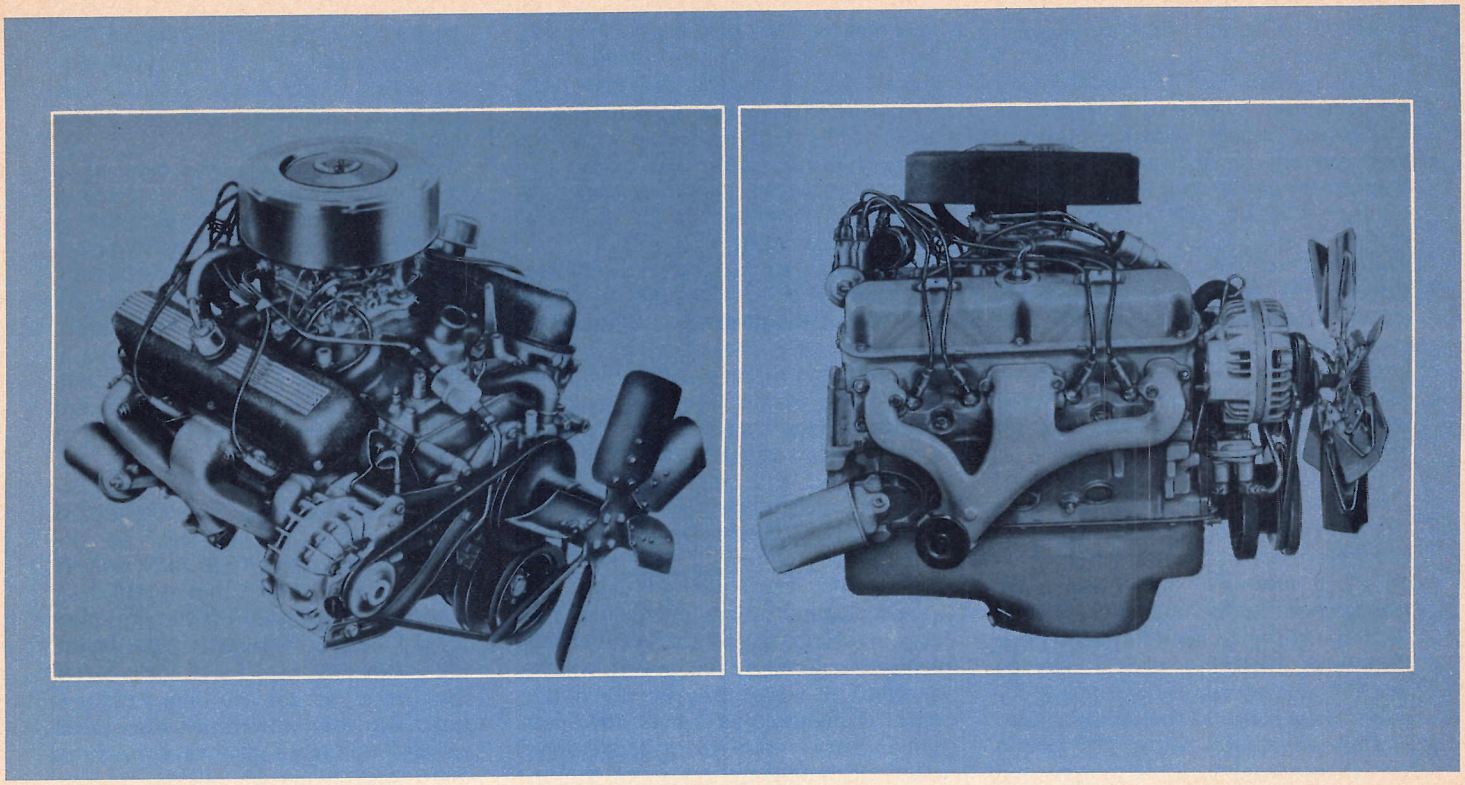


MOPAR MAGIC

Chrysler Corp.'s 273, 318 and 340-cid V-8s have all the performance potential you could ask for. Here are the magic numbers to make them go.

BY JOHN DINKEL

THE CHRYSLER series of small block engines began in 1964 when a 273-cid version was introduced for use in the Plymouth Valiant and Dodge Dart. With a bore and stroke of 3.625 in. and 3.312 in., this engine was the smallest and lightest V-8 engine ever built by Chrysler.

The first 273 was not a performance engine. It had a 2-barrel carburetor, a compression ratio of 8.8:1 and 180 bhp. But it was light, and strong, and it gave the Valiants and Darts performance equal to that of the bigger Plymouths and Dodges equipped with the 318-cid V-8.

Which brings up a confusing point. MoPar has produced two, separate 318s. The early one, dropped in 1966, was a development of older polyhead Chrysler Corp. engines. The 318s from 1967 until the present are descendents of the 273. Both 318s are economy engines, but that's about all they share. You can get performance parts for them, as we'll see presently, but parts from early and late 318s seldom interchange.

In 1965 a Power Pak version of the 273 was introduced. This engine featured a 4-barrel carburetor, longer duration camshaft, domed pistons to raise compression from 8.8 to 10.5:1, a non-silenced air cleaner, a low back-pressure exhaust system, and a dual point distributor. These modifications upped the horsepower to 235 bhp at 5200 rpm, with torque increasing to 280 ft.-lb. at 4000 rpm.

The lightweight 318 of 1967 kept the stroke of the 273, but used a larger bore of 3.91 in. While displacement, bore and stroke, rated horsepower (230 bhp at 4400 rpm), and maximum torque (340 ft.-lb. at 2400 rpm) were the same as for the preceding 318, the new 318 weighed 55 lb. less, had wedge-shaped combustion chambers instead of polyspheric and was equipped with hydraulic lifters instead of mechanical.

Two of the objectives for the new engine were to make the fullest possible use of components produced for the 273 and to build the engine with the same production facilities used for the 273. Consequently, connecting rods, cylinder heads and head covers, oil pan, exhaust manifolds, air cleaner, and valves are the same as for the 273. New designs were adopted for the cylinder block, intake manifold, pistons, valve train, and camshaft.

In 1968, the 2-barrel version of the 273 was given hydraulic lifters for quieter operation and to eliminate periodic lifter adjustment. An ac-

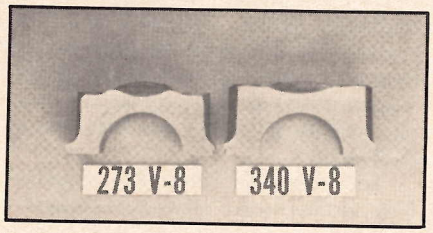
companying cam change and increase in compression to 9.0:1 upped power to 190 at 4400 rpm. Maximum torque remained at 260 ft.-lb., but occurred at 2000 rpm instead of the previous 1600 rpm.

The Power Pak 273 was replaced by a 340-cid engine in 1968. The cylinder block for the 340 has the same external dimensions as the block of the 273-cid engine. The increased displacement was obtained by increasing the bore size from the 3.62 in. of the 273 to 4.04 in., which is considered the practical maximum for this cylinder block. A few words of caution. Before any hop-up artists begin formulating plans, it should be emphasized that neither the 273 nor the 318 can be bored to 340 specifications with complete safety. The increase in displacement from 273 up to 340 was not just an overbore. A core change was required to maintain cylinder wall thickness. If the cylinder cores of a 318 block happen to be perfectly centered, it's possible to open this engine up to 340 cid, but the process can cost a block.

The 340 engine incorporates many features which distinguish it from the other small blocks. An oil baffle or windage tray is placed between the oil pan and the crankshaft. This sheet metal baffle prevents the crankshaft from whipping up a dense oil mist and sucking that mist into its rotating path where the increased friction would lower net horsepower. It also prevents foaming of the oil which can lead to bearing failure due to insufficient lubrication. The 340 incorporates a double roller timing chain similar to the one for the Hemi. Its greater strength and durability are particularly suited to high-speed operation. The torque limiting fan drive which is standard on the 340 limits power loss from the fan at high rpm. A Chrysler and an industry first with the 340 was the successful application of aluminum-tin alloy main bearings. Chrysler engineers specify it for the No. 1, No. 2, and No. 4 main bearing shells where its superior load carrying capacity (over twice that of conventional material) and resistance to fatigue at high temperature are most needed.

The heads for the 340 are all new. They look similar to the ones used in the 318 engine, but they have larger intake and exhaust ports. To go along with the improved heads a new intake manifold was designed. The cast iron double-level manifold is of conventional design, but the branches are much larger than any of the other small block intake manifolds—2.2 square inches of area versus 1.63 for the 318 and 1.6 for the 273. Horsepower rating is 275 at 5000 rpm, almost 15% higher than that of the 273 4-barrel and torque reads 340 ft.-lb. at 2000 rpm. The old adage "racing improves the breed" applies to the street version of the Trans-Am 340 engine which will appear for 1970-1/2. The block is still equipped with 2-bolt mains, but the new casting features additional material in the area of the main bearing webs, which will allow the addition of 4-bolt mains for added bottom end strength. The heads for the street Trans-Am 340 are identical with previous castings except in one area. The intake pushrod holes have been offset and relocated away from the ports so that more material can be removed from the ports without breaking into the pushrod passage. Borrowing a trick from the bigger 440, the latest 340 has three 2-barrel carburetors atop a Chrysler designed aluminum manifold which Edelbrock produces. With this new manifold arrangement the '70-1/2 340 has been rated at 290 bhp at 5000 rpm with torque increasing to 345 ft.-lb at 3400 rpm.

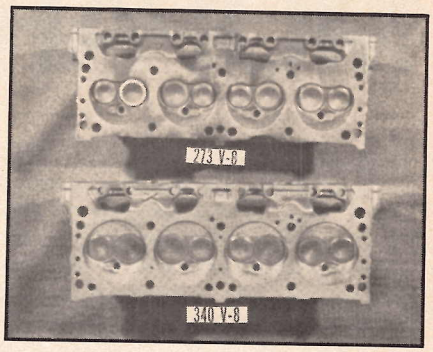
CRANKS



The crankshafts for the small blocks and the old 318 cid are of conventional 90-degree design with five main bearings and six counterweights. They all have 2.5-in. diameter main journals, 2.125-in. rod journals, and a 3.31-in. stroke. The crank for the new 318 is interchangeable with the one used in the polyspherical 318. Two determinations made early in the 318 design program enabled Chrysler engineers to use the crank from the previous 318: The length of the new block was kept the same; and reciprocating weight didn't change because the total weight of the piston and connecting rod assemblies is the same as in the previous engine. Up until 1967 every crank was of forged steel. Starting with 1967 the cranks were cast from high nodular iron. The crank for the 340 reverts to previous practice: It is forged steel. By drilling lightening holes in the end crankpins and providing full counterweights, it was possible to balance the increased reciprocating and rotating weights of the 340 crank without resorting to external counterweighting. The fatigue strength of this crank was increased approximately 20% by shot peening the undercut fillet radii.

For extended operation at high rpm with a 273, 318 or 340, it is advisable to install a 318-3 truck crankshaft (PN 2668810). This is a hardened shaft using tri-metal bearings (rod bearings PN 2421305; mains No. 1, 2, 4 PN 2421330, No. 3 PN 2495094, and No. 5 PN 1643151). For improved oil flow, upper main shell halves (with oil groove) should be installed in both the block and main bearing caps. The 318-3 crank is balanced the same as the 273 and 318 cranks and doesn't need rebalancing. Rebalancing is a must when this crank is used in a 340 engine.

HEADS



Disregarding the poly head 318 engine, all the heads from the small block engines will interchange with one another. The heads on the 273 and 318 engines are identical. Since the 340 head (PN 2531902) has intake and exhaust ports that are much larger than those found on the other two engines (2.2 sq. in. of intake area and 1.7 sq. in. of exhaust vs. 1.7 sq. in. of intake and 1.25 sq. in. of exhaust area for the 273) this is the head to use for performance work. The valves in the 340 head are also much less shrouded than those in the 273/318 head. When the modified street Trans-Am heads (PN 3577050) become available, these will be the ones to get. In the meantime the standard 340 head is only a slight compromise.

When the 340 heads are used on the 273 and 318 engines, the block must be notched for valve clearance. A composition head gasket must be used to provide proper sealing.

The minimum legal NHRA combustion chamber for the 273 cylinder head is 57.3 cc. When milling 273 heads to obtain the minimum volume, mill off 0.0065 in. per cc of chamber volume. Do not sink the valves in an attempt to equalize chamber volumes. Sinking the valves disturbs the air flow characteristics of the valve port and seat with a subsequent horsepower loss. For each 0.10 in. removed from the cylinder head, 0.0085 in. must be removed from each intake port side of the intake manifold and 0.0116 in. from the front and rear stock rail. The holes in the manifold must also be elongated.

For modified racing, the 273 heads may be safely milled to reduce the ▶

SMALL BLOCK MOPAR

Cid	Model years	Bore x stroke, in.	Compression ratio	Bhp/rpm	Torque ft-lb/rpm	Valve dia., in. int./exh.	Cam timing, deg. int./exh.	Lift, in. int./exh.
273	1964-1967	3.625 x 3.312	8.8:1	180/4200	260/1600	1.78/1.50	14-46/58-2	.395/.405
273	1968-1969	3.625 x 3.312	9.0:1	190/4400	260/2000	1.78/1.50	10-50/58-10(2)	.372/.400
273 High Perf.	1965-1967	3.625 x 3.312	10.5:1	235/5200	280/4000	1.78/1.50	15-54/56-12	.415/.425
318	1967	3.91 x 3.312	9.2:1	230/4400	340/2400	1.78/1.50	14-50/56-8	.390/.391
318	1968-1970	3.91 x 3.312	9.2:1(3)	230/4400	340/2400(3)	1.78/1.50	10-50/58-10	.372/.400
340	1968-1970	4.04 x 3.312	10.5:1	275/5000	340/3200	2.02/1.60	22-66/74-22(4)	.430/.445(4)
340	1970½	4.04 x 3.312	10.5:1	290/5000	345/3400	2.02/1.60	22-66/74-22	.430/.445
318 Polyhead	1957-1966	3.91 x 3.312	9.0:1	230/4400	340/2400	1.84/1.56	19-45/59-1	.397/.403

MOPAR MAGIC

continued

combustion chamber volume to 51.3 cc. This gives a compression ratio of 12.5:1, when used in conjunction with the domed Power Pak pistons. Extreme caution must be exercised to keep the head gaskets from blowing at this ratio. Piston to valve clearance should be maintained at 0.08 in. If a high-lift cam is used in conjunction with this compression ratio, it will be necessary to deepen the valve pockets in the piston tops.

The NHRA legal minimum head volume for the 340 is 63.3 cc. To reduce the chamber volume, remove 0.0048 in. from the head surface per 1 cc of chamber volume. For each 0.01 in. removed from the head, 0.012 in. must be removed from the intake face of the head.

It is possible to install larger valves in the 273/318 head. For the intakes, use a 1.92 in. dia. intake valve (PN 1821241) from the 392 Chrysler Hemi. The stem must be shortened 0.06 in. The valve should be faced at a 30-degree angle. The valve seats should also be 30-degrees with a seat width of 0.05-0.07 in. A 392 Hemi 1.75 in. dia. exhaust valve (PN 1634744) with the stem shortened 0.06 in. can be used in place of the standard 273/318 exhaust valve. The valve should be faced at a 45-degree angle; valve seats should also be 45-degrees. When installing larger valves it will be necessary to notch the edge of the bores for valve clearance. When notching the bores be careful not to grind outside the head gasket beads. The valve pockets in the domed pistons will also have to be enlarged, the depth depending on the amount of milling done on the block deck and heads. Take care that the notches do not overlap the top ring travel. Clearance should be provided for up to 0.540 in. valve lift. Maintain an 0.08 clearance between the valves and pistons and cylinder bores. Check this clearance carefully as inadequate clearance will result in bent valves.

VALVE TRAIN

Until 1968 all the 273 engines were equipped with mechanical lifters. The high performance version of the 273 was dropped in 1968 and the 2-barrel version was switched to hydraulic tappets. The old polyhead 318 used mechanical lifters; the modern 318 uses hydraulic lifters. The 340 which replaced the 273 4-barrel incorporates hydraulic lifters as part of its design. The camshaft and valve gear are interchangeable on the 273, modern 318 and 340 engines.

The standard Power Pak camshaft (PN 2465679) and valve gear on the 4-V 273 will run to 6000 rpm before valve float. The minimum installed height for the standard Power Pak valve spring (PN 1739534) is 1.62 in. Checking pressures are: 103 lb. at 1.62 in. valve closed; 184 lb. at 1.31 in. valve open. This spring can be used on the low output 273 and also on the 318. When using this spring on the 2-barrel 273 engine it is advisable to install the spring as close as possible to the original 2-barrel valve closed load of 74 lb. MoPar stocks one optional heavy duty valve spring (PN 1944554) that can be used with the standard Power Pak camshaft. It raises the valve float speed to 6400 rpm. When using this spring assembly remove the surge damper as it goes solid and will break. The installed height for this spring is also 1.62 in. It cannot be used with aftermarket cams having a lift of more than 0.430 in.

Any 2-barrel 273 or 318 engine will benefit greatly from the installation of the 273 4-barrel Power Pak cam. Stock lifters and valve springs will work with this cam, although the optional heavy duty valve spring may also be used.

Early 1968 340 V-8s equipped with 4-speed transmissions came from the factory with a cam (PN 3412044) a little wilder than the present 340 cam. This camshaft offers extra street performance with a little sacrifice in operating smoothness, particularly in TorqueFlite-equipped cars.

Without the huge development budgets of competitive manufacturers, the Chrysler performance people got the idea of selecting various pieces of aftermarket speed equipment, testing them and then certifying them as factory approved for dealer installation. This made the stuff stock in the eyes of the racing organizations, but saved Chrysler the expense of designing and tooling it. The result of this philosophy is the availability of several aftermarket cams developed specifically for the small block MoPar engines.

In 1966 Chrysler produced a Max Performance Drag Dart Package. The engine was basically the 273 high-performance model and was rated at 275 bhp. The cam used was the Racer Brown ST-12. With this cam Chrysler recommends the use of Hemi tappets (PN 2402288). It is possible to use the standard 273 tappets, but it would be advisable to hone the cylinder block lifter bores 0.005 in. oversize if you do. This "D" Dart cam requires Racer Brown valve springs (VR 18X outer, VR 56 inner). The outer spring surge damper may not fit over the inner valve spring seat on the 273/318 cylinder head. Either modify the spring retainer and reduce the inner spring seat diameter or remove one coil of the surge damper. The ST-12 cam is still available from Racer Brown but is recommended for vehicles with manual transmissions only.

Two other potent cams for street/strip use are the Racer Brown ST-14 (266-266-50 with 0.485 in. lift, Chrysler PN 3412018) and the Racer Brown ST-21 (286-286-62 with 0.520 in. lift). The ST-14 has been found to be most successful in automatic equipped cars while the wilder ST-21 is most effective with a manual transmission. These cams should be used with the high-performance valve spring kit (PN 3412072) and mechanical lifters.

For race only purposes opt for the Racer Brown STX-21 (Chrysler PN 2836146). With 306-degrees of intake and exhaust duration and 96-degrees of overlap, this cam will result in a big low end pay cut if you attempt to run it on the street. In order to use this cam in 273/318/340 engines equipped with

Carb.	Comments
2V-BBD(1)	(1)1964; 2V-Stromberg
2V-BBD	(2)1968-1969 hydraulic lifters
4V-AFB	
2V-Stromberg	(3)1970-compression ratio 8.8:1; 320 ft-lb @ 2000 rpm
2V-BBD	
4V-AVS	(4)First half 1968—manual transmission cam timing 26-70/78-26; lift .445/.445
3-2V Holleys	Trans-Am street engine, beefed block and modified heads
2V-Stromberg	Polyspherical head engine, mechanical lifters, not part of modern small block series

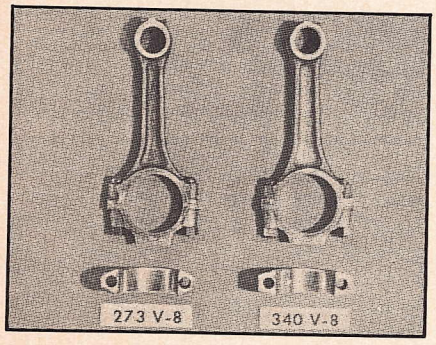
hydraulic lifters, it is necessary to use stiffer valve springs and the mechanical valve gear from the 1965-67 235-bhp 273 V-8s. A dual spring configuration employing Racer Brown 957C inner and Racer Brown 957A outer valve springs is recommended. Installed valve spring height is 1.68-1.70 in. Hemi engine tappets also are suggested.

The Racer Brown 71-R roller camshaft yields the greatest horsepower of any cam yet tried in these engines. This cam and roller tappet kit is available from Chrysler under PN 3412020. Use this cam only in conjunction with the Racer Brown valve springs. Because of the extremely high lift characteristics of this cam, piston to valve clearance should be checked and a clearance of 0.10 in. must be maintained at the overlap position.

Chrysler has one optional cam (PN 1825890) designed specifically for the polyhead 318. It's a fairly mild cam and is better on the street than on the strip. This cam must be used in conjunction with solid lifters (PN 2469501) and heavy-duty valve springs. The valve lash should be set hot at 0.010 in. intake and 0.018 in. exhaust.

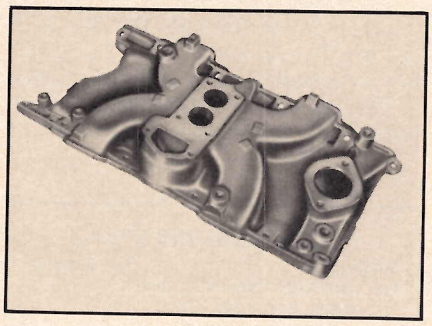
In order to achieve the most benefit from any of these optional cams it is recommended that the carburetion of the engine be improved at the same time.

CONNECTING RODS



Since the stroke of all the small blocks is shared, the length (6.123 in. center to center) of all the connecting rods is the same. The rods in the 273 and 318 engines are identical, but the rod for the 340 engine is a new forging, larger and heavier than the 273/318 rod, especially across the big end where the extra strength is needed. The "I" portion of the rod has also been beefed. In competition applications of the 273/318 engines, it is highly advisable to use the 340 rods. The crank for the 273/318 engine will have to be rebalanced if the 340 rods are used.

MANIFOLDS AND CARBS



All the intake and exhaust manifolds are interchangeable on the small block MoPars. However, the 340 manifolds should be used with the 340 heads to insure proper port alignment. It is possible to open up the ports on the 273/318 engines to some extent for use with the 340 manifolds, but cautious grinding is in order.

For the standard 2-barrel 273 and 318 a good street modification is the installation of the 4-barrel carb (PN 2532309) and intake manifold (PN 2465727) that came standard with the high-performance version of the 273. When installed in conjunction with the less restrictive exhaust system, an increase of approximately 37 bhp is obtained. The exhaust system alone is good for about 12 bhp.

If you've got the 4-barrel manifold on a 273 or 318 the next step would be the installation of a Carter 3447S carb (PN 2402359). This is the carburetor used on the Stage I 426 wedge V-8s with ram manifold. The following changes will have to be made in order to install this carb: Enlarge the secondary throttle bores in the intake manifold to 1.69 in. diameter; drill the carb base to match the narrow intake manifold attaching bolt pattern; make a spacer to raise the carb to provide necessary secondary throttle linkage-to-intake manifold clearance; set the secondary linkage so that the secondaries open fully; raise the accelerator pedal to obtain sufficient throttle cable travel to completely open the throttles; install Carter No. 120-159 (0.089 in.) primary jets; Carter No. 120-167 (0.095 in.) secondary jets; Carter No. 16-75 primary metering rods; and Carter No. 58-151S and 58-152S secondary clusters; since the velocity valve weights may be too heavy, it is advisable to try to lighten them.

If you're not satisfied with the stock 4-barrel manifold then bolt on an Edelbrock Hi-Riser (PN P2836139). This manifold can be used with the standard factory AFB and AVS carbs, but for optimum performance on a 273 or 318 engine a Holley 4160 list 3988 carb is recommended.

To make it workable this carburetor must incorporate the following changes: install No. 73 primary main metering jet; No. 43 primary power valve channel restriction; No. 42 left (throttle lever side) secondary jet; No. 43 right (diaphragm side) secondary jet; a 38R-585 secondary diaphragm spring without the ball check; front inlet float bowls with No. 120 needle and seat assemblies; and a 25R-398A power valve that operates at 6.5 in. Hg. You will also have to notch the primary and secondary boost venturies. This carb is expensive and requires extensive modification to make it work correctly. Therefore, Chrysler also markets a jetting kit (PN 2836166) for use with the standard Carter 273 AFB carb when mounted on the Edelbrock manifold. It's the way to go if you want added performance without laying out a big chunk of cash.

The standard 4-barrel manifold and Carter AVS carburetor set-up on the 340 engine is quite good. However, there are a few adjustments which can be made in order to optimize performance: Put the accelerator pump on the richest position (the hole nearest the carb on the 3-hole arm); adjust the idle mix to the rich limit by turning the carburetor's single adjustment screw almost all the way counterclockwise; adjust the wide open throttle response by varying the tension in the Air Valve Secondary return spring. The starting point for this adjustment is 2.5 turns in the tension direction from vertical limpness. Once this spring tension is achieved, go one-quarter turn either way and test—then experiment with one additional turn adjustment and test again.

The Edelbrock manifold is also a good performer on the 340. It can be used in conjunction with either the Carter AVS or the Holley 4160 list 3988 carb.

For all out go power the recently ▶

MOPAR MAGIC

continued

released Edelbrock Street Tunnel-Ram manifold (STR-12) is the way to go. Holley carburetors No. 4224 (600 cfm) are recommended for optimum horsepower with this manifold. No. 74 primary jets should be used in these carbs along with 0.076 secondary plates.

Because of the existence of first the 273 and then the 340 engine as a basis for a performance engine, very little performance evaluation work has been done by Chrysler on the 318 wedge head. It will, however, accept any of the carb, manifold, and cam combinations recommended for the 273, and 340.

Chrysler has not forgotten the older 318. Two optional intake manifolds are available for this early polyhead engine. These are the single 4-barrel (PN 1859298) and the dual 4-barrel (PN 1732479). The single four manifold takes a Carter AFB (PN 2203142) while the dual four takes a PN 2206468 carb up front and a PN 2299175 carb at the rear.

PISTONS

Since the bore of each of the small block engines is different, you can't switch pistons between the various engines. The domed pistons standard in the high performance 273 (PN 2585267 left; PN 2585268 right) can be used in the 2-barrel version. Installing these pistons will raise the compression to 10.5:1.

Factory pistons have the pin offset to reduce piston slap. By reversing the offset (reversing the piston) engine friction can be reduced. In engines equipped with domed pistons (Power Pak 273 and 340) this can be accomplished by installing pistons from the right bank in the left bank and vice versa. This means the notch will now be towards the rear of the engine. With flat top pistons it is only necessary to reverse the piston on the rod and not necessary to swap from bank to bank.

For all-out competition, raised-dome forged aluminum pistons are available. Chrysler does not stock them. Therefore an outside source such as Forgedtrue or TRW would be the place to look.

BITS AND PIECES

A good set of headers will always pay dividends in extra performance.

The installation of the air conditioning water pump impeller (PN 2402923) will reduce water flow at high rpm and allow more usable horsepower.

The 340 windage tray and torque limiting fan drive will bolt to the 273 and 318 engines.

It is not necessary to balance an engine using production parts (crank, rods, pistons) for racing use. Production balance tolerances are more than adequate.

The standard 273 clutch assembly may not have adequate capacity to prevent slippage during wide open throttle, high rpm shifts. Use a Weber pressure plate with a MoPar heavy-duty clutch disc (PN 2401102). Even better than the Weber is a 340 clutch. However, it is an inch larger in diameter and will entail switching to a 340 flywheel and clutch housing.

For engines that will see a lot of revs, a dual point distributor (PN 2444873) is a worthwhile investment. This distributor fits both the 273 and 318 engines.

To provide increased oil capacity both for better cooling and to insure that the oil pickup will always have an adequate supply to draw from, the oil pan should be modified. The pan should be lowered, bringing the front of the pan down abruptly behind the K-member to get full pan depth over as much area as possible. Capacity should be at least seven quarts. When using a deep pan do not use the windage tray.

Some of the early 1966 Power Pak 273 cars equipped with manual transmissions came through with the small 7.25-in. rear axle instead of the beefier 8.75-in. axle. Check to see which one your car has before racing the car. The 7.25-in. axle will break very easily if it is subjected to the abuse of more than two or three full throttle power shifts.

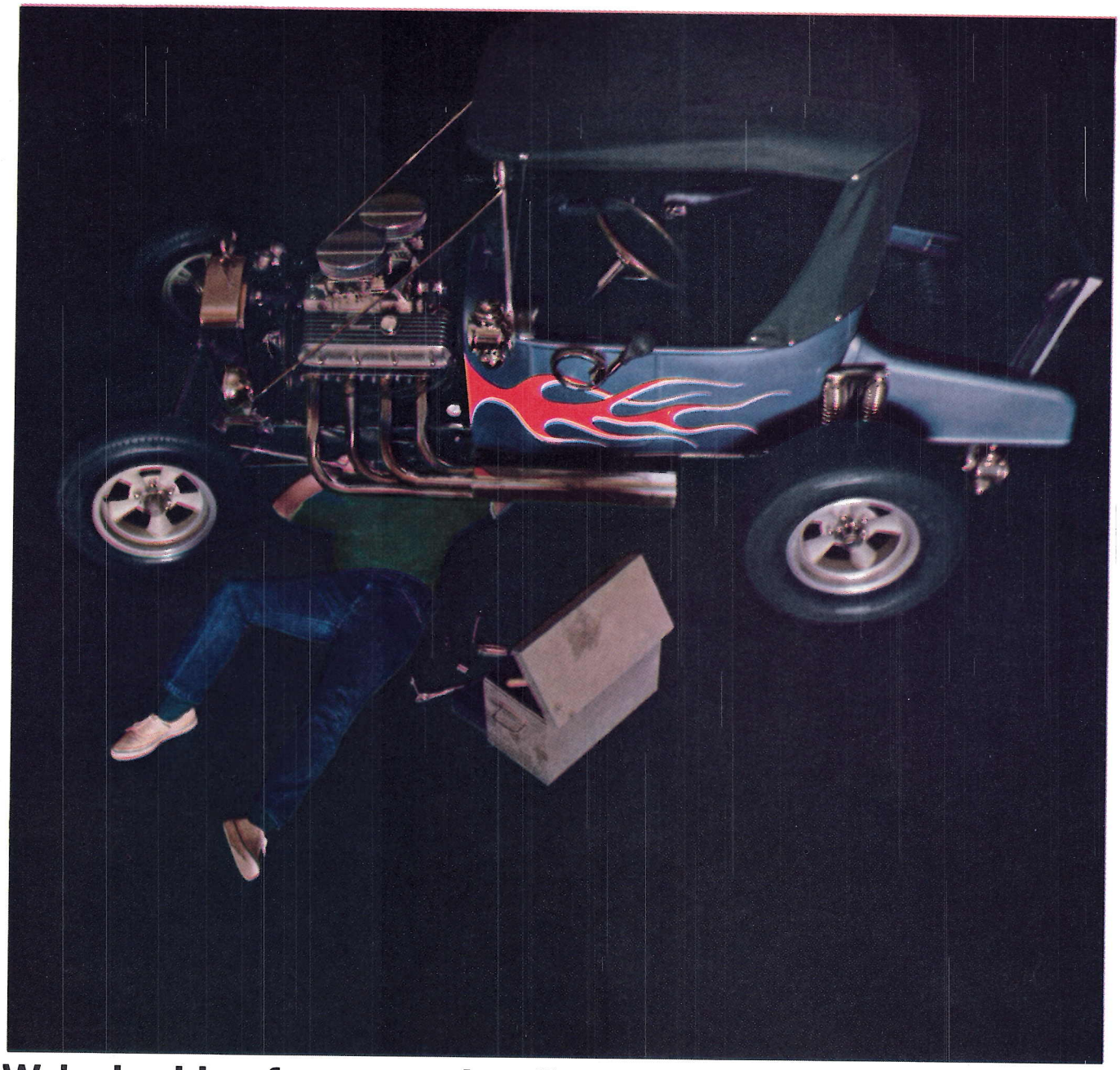
MISCELLANEOUS BITS & PIECES

Description	Part Number
Low restriction exhaust system for Valiant, Barracuda and Dart with 273 Cid Engine:	
Front muffler	2534-467
Exhaust pipe	2534-450
Rear muffler (with pipe)	2660-445
Exhaust pipe ext. (Valiant)	2534-456
Exhaust pipe ext. (Dart)	2534-471
Tail pipe (intermediate)	2534-458
Front muffler hanger pkg.	2534-460
Rear muffler & pipe hanger	2585-358
Rear muffler clamp pkg.	1843-009
Front muffler & exhaust ext. clamp pkg.	1603-365
Windage tray—273, 318, 340 engines	2531-945
Bolt (4 required with windage tray)	6027-335
Washer (8 required with windage tray)	2468-135
Cylinder block—1970½ 340 Street Trans-Am engine with beefed mains	3577-229
High performance 273 4-bbl manifold and carb:	
Carburetor	2532-309
Intake manifold	2465-727
Throttle control cable mtg. assy.	2465-986
Air cleaner cover	2532-609
Air cleaner support	2465-159
Air filter	1946-923
Acc. pedal return spring brkt.	2465-985
Holley 4160, list 3778 "D" Dart carb	2843-944
1965-67 235 bhp 273 mechanical valve gear:	
Rocker arms	2806-988
Rocker adjusting screws	1855-238
Rocker spacers	2463-324
Rocker shafts	3536-526
Pushrods	2465-343
Declutching fan drive (66 and later)	2863-263
Fan (66 and later)	2863-216

DOING IT

You bought a 2-barrel 273 and were unhappy the first time you had your doors blown off by a Power Pak version. What can you do? Install the Power Pak cam, lifters (PN 2469501) and pistons. Then bolt on the 4-barrel manifold and carb, the high-performance exhaust system, and the dual breaker distributor. This will up the output of your engine about 55 bhp and make your car a match for that high-performance 273 lurking around the corner. You aren't interested in equality but want to give that other guy a taste of your exhaust? The first step would be one of the optional cams and carb setups. Get the Racer Brown ST-12 cam and accompanying valve springs along with a Holley 4160, list 3778 carb. Install the 318-3 truck crank for added durability and bolt on a set of headers. Modify the dual point distributor to provide full advance at 1000 to 1200 rpm with maximum total advance at 35-degrees. Disconnect the vacuum advance. Put all this together with lots of tender loving care and you'll have an engine comparable to the 1966 275-bhp "D" Dart.

If you've got a 340 you may not be happy to know that somewhere there is a 273 putting out as much horsepower as your stock engine. What do you do? Install one of the optional 340 cams. Then pester your dealer until he comes up with a 3-carb manifold and carb arrangement which will yield another 15 horsepower over the 4-barrel version, or bolt on the Edelbrock Hi-Riser. How far can you go with your modifications? If you're a fast talker and flash enough green stuff you might, just might, talk Keith Black into building you a 304-cid engine with trick rods and pistons and all the other goodies. How come we haven't mentioned a small block 304 MoPar engine before? It's all new and you won't find any parts at your dealers yet. It's the engine Dan Gurney and the other MoPar drivers will be thrashing around the Trans-Am circuit during 1970. ■



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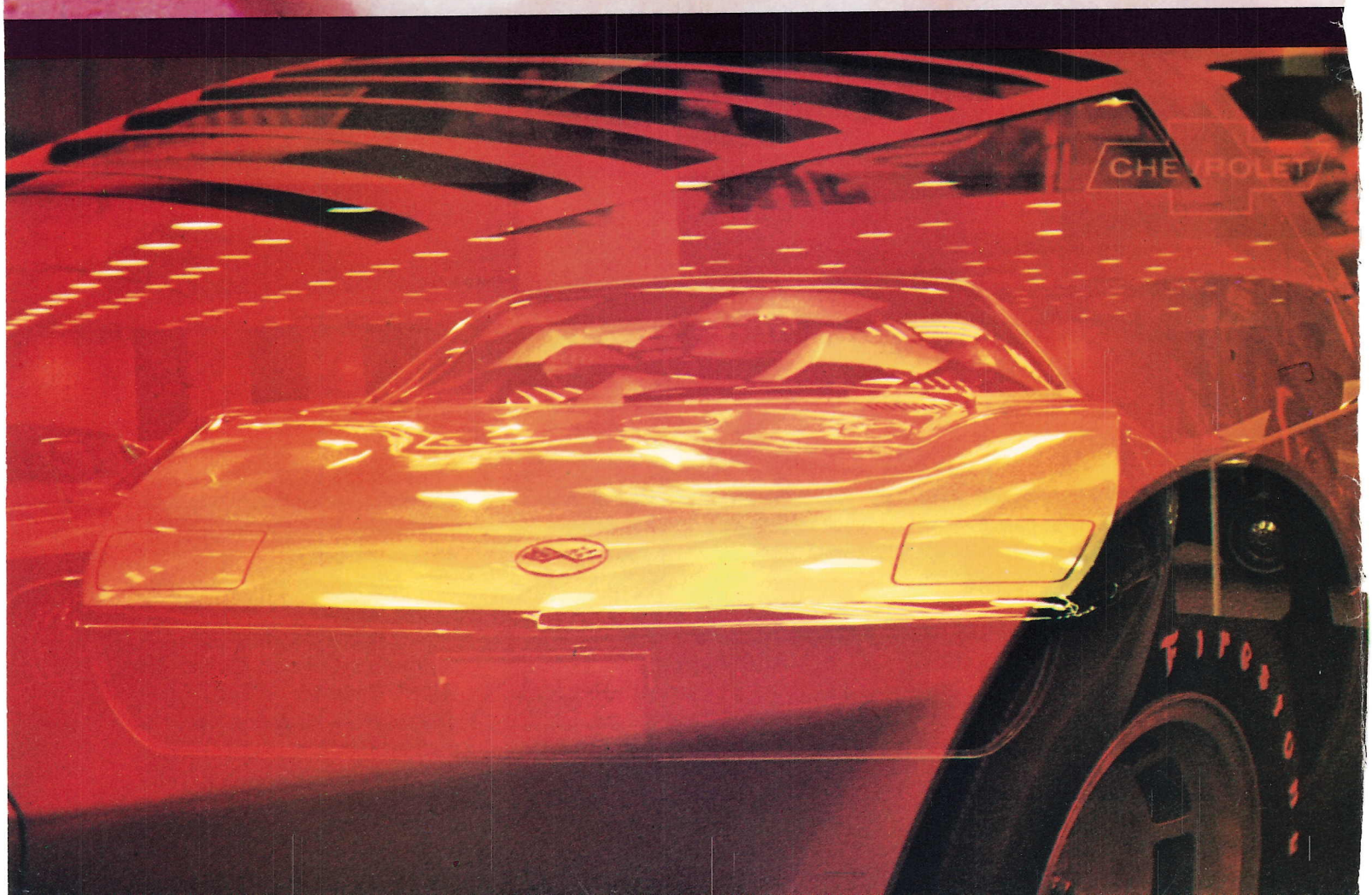
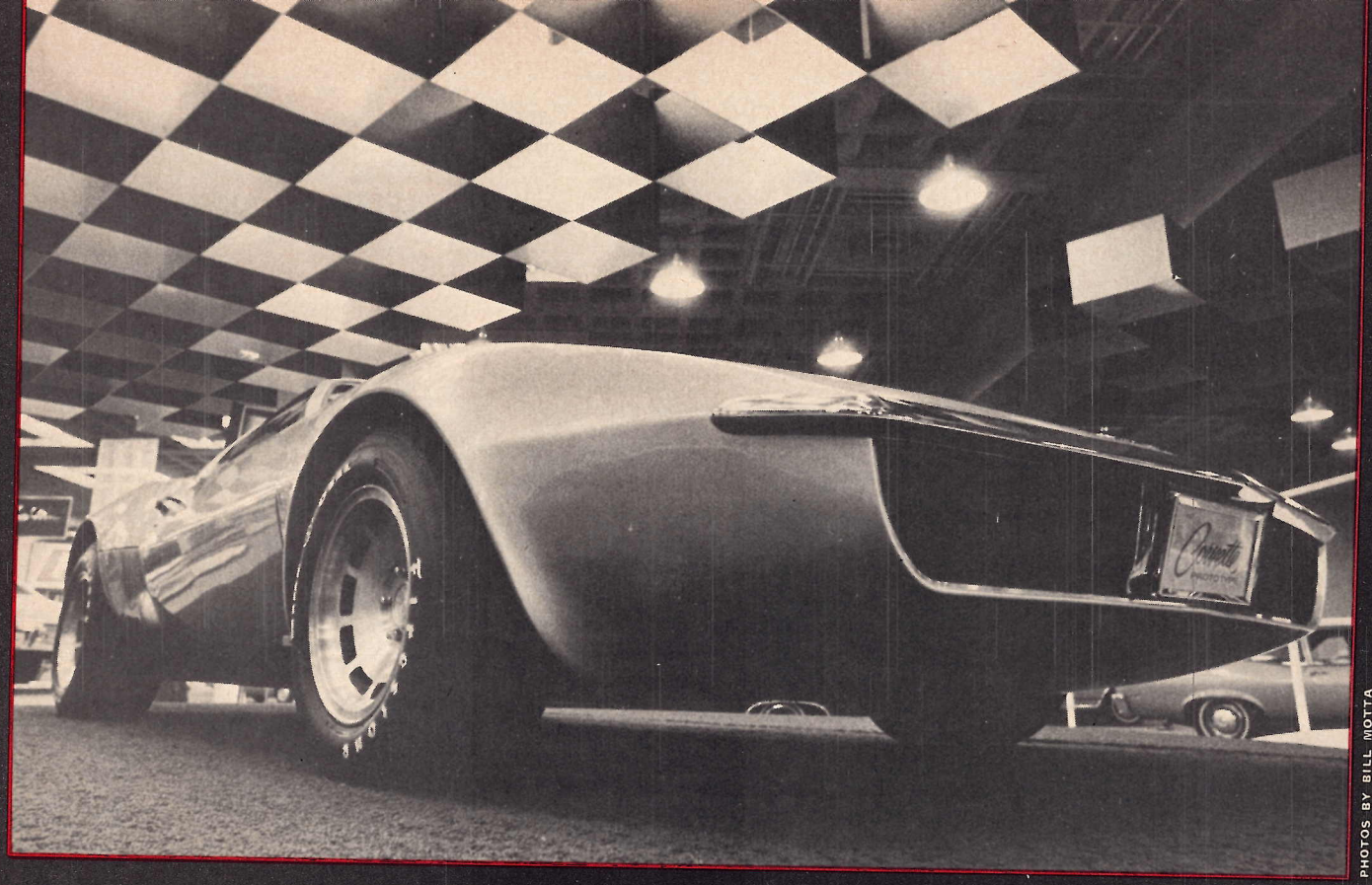
Guardian Maintenance Training


CHEVROLET



PHOTOS BY BILL MOTTA

THE NEXT CORVETTE?

It's a mid-engined Stingray, a styling success, a technical delight. Let's hope it's also our first look at 1972.

NOBODY HAS secrets like Chevrolet has secrets. The day before the New York Auto Show opened, everybody knew about Ford's Pantera, the American Motors AMX III, the latest version of Mercedes-Benz' C-111.

Official word and scuttlebutt agreed: The mid-engined Corvette was dead as Marley. Chevrolet would display its new engine, but no real show cars. The stylists said they weren't allowed to build show cars any more, due to the budget and the division's habit of not building one if there were no plans to build thousands.

And the doors opened, and lo, there was a mid-engined Corvette. It didn't even have a fancy name, simply a plain, bold label—Corvette prototype.

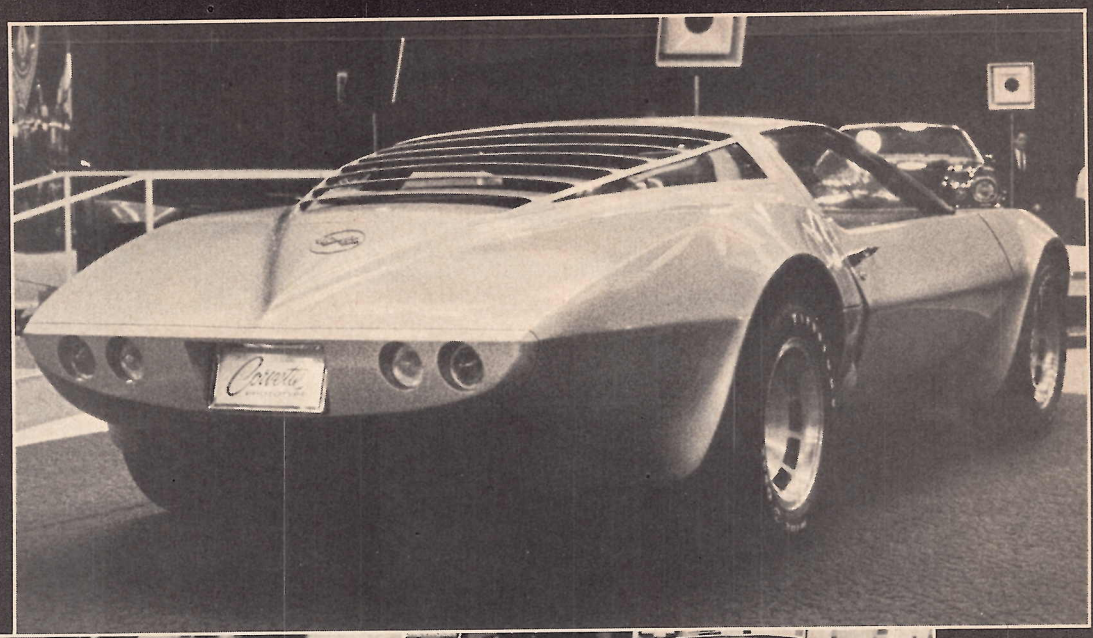
You are looking at Chevrolet's equivalent of the modern novel, with everything meaning something, on several levels at once.

On the surface, the mid-engined Corvette is an astonishing styling success. It looks new, and it looks beautiful, and it looks like a mid-engined Corvette, the car Zora Arkus-Duntov has wished for all these years. It looks like 200 mph, and like $20,000, and like a Stingray. Before you can say "copy" of one feature or another, the press release reminds you that those rear-window louvers are inspired by "Chevrolet's pioneering Monza GT of the 1960s." The press release is also part of the surface. It contains facts:

Wheelbase	95.5 in.
Overall length	174.5 in.
Height	42.5 in.
Width	74.8 in.
Tread, front	61.56 in.
Tread, rear	61.42 in.

Shorter, lower and wider than the current Corvette. There's much more. Curb weight is 2595 lb., half a ton less than the 1970. Weight distribution is 44% front/56% rear; perfect for a mid-engined road car. The prototype will accommodate any, yes, any, current Chevrolet V-8. Makes you tingle just thinking about it.

Independent suspension all around, of course. Short and long arms in front, control arms and the axle shafts locating the wheels in back. A disc for every corner. Real magnesium wheels, 15x8 front/15x9 rear, with E60 and G60 tires.



THE NEXT CORVETTE?

continued

At level two, we have what they don't say. We are indebted for this information to a CAR LIFE reader who is designing his own mid-engine car and who went to the show. He was lurking nearby when the show people popped the rear deck open. They would not do it for journalists, but he looks innocent.

He telephoned. "You're not going to believe this, but the Corvette prototype has a transverse engine."

"You place a 3000-mile 'phone call to make jokes?"

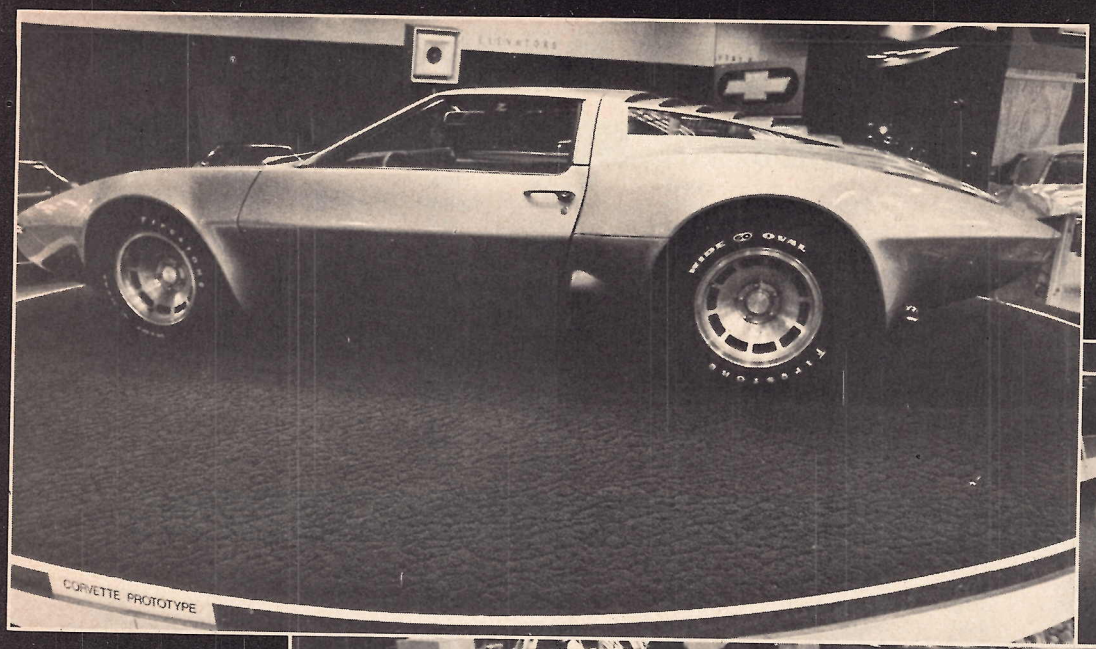
"I mean it. You know how the Toronado is, with the transmission next to the engine? Same thing here, but it's turned 90 degrees so the crankshaft runs east and west to the car's north and south. The transmission is in front of the engine, though. The drive feeds somehow through or below or around the engine."

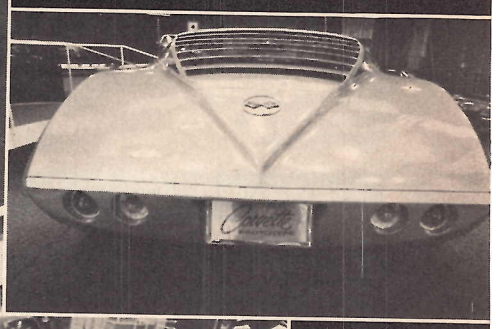
How, he couldn't say. The lid was shut and he wasn't allowed any closer. We got to work. Our Inside Man at the Stovebolt Works confirmed the transverse engine, but he hadn't been allowed to see it, either.

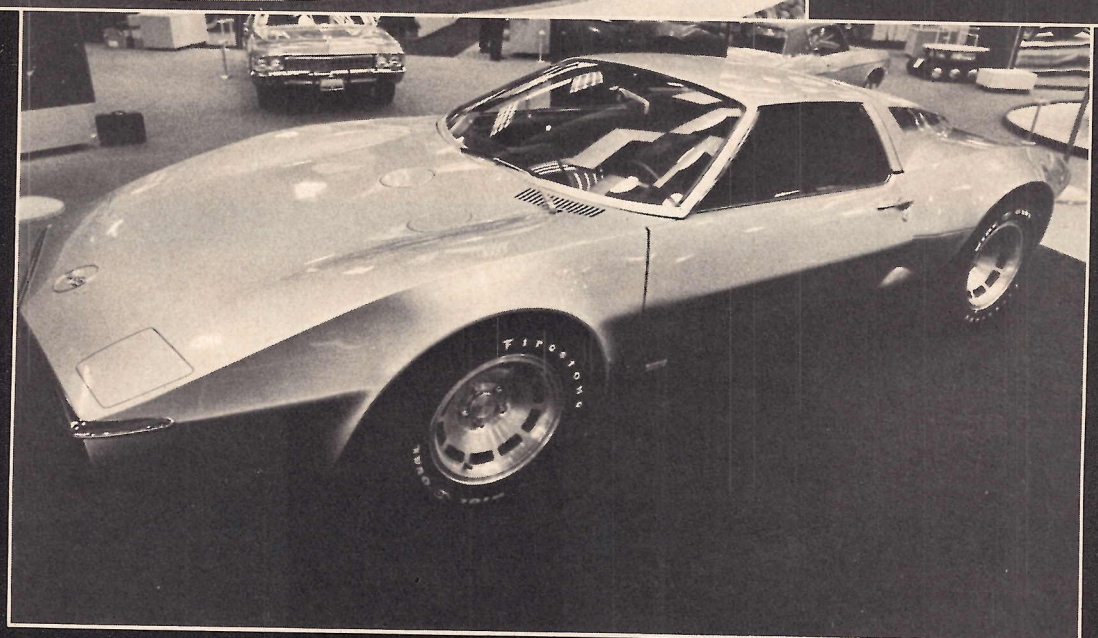
So we went higher up the ladder. Does the prototype Corvette have a transverse engine?

Long, stunned, pause. "Don't quote me, but it does. I don't know how you found it out, and I'm not going to say anymore about it . . . But you must remember that just because the prototype has some feature, that doesn't mean the production car will have it, even if we decide to build the car."

Why the transverse engine was answered with more research. We have seen earlier this year that getting even two people and their luggage into a mid-engine car isn't easy. We know the Mangusta is cramped. We're told the Pantera is, too. The Lamborghini Miura has its intake pipes in the driver's ear. The AMX III has a long wheelbase.







But if you turn the engine 90 degrees, and put it next to the differential, it is in the back of the middle, so to speak. And the transmission is low. Presto, space between the engine and the people, and a small luggage shelf so the space can be used. Obvious, now that Chevrolet has thought of it.

More secrets: The car in the show was not licensable. It did not have the lids for the headlights cut open, for one thing. But the car was designed to pass the safety regs. One has not been crashed, but the insiders assure us that the car will pass if and when the time comes. It can pass the emissions requirements, simply because it can use the production engines.

Now we are at the final level. When you look at the prototype Corvette, you get a glimpse of a struggle inside Chevrolet Division. The car was a secret because there were those who did not want it in the show. The marketing people, for example, had hoped to star the XP-887 engine, and didn't want their thunder stolen.

The car has proponents, too. They prevailed, this time. The car was displayed. The alignment of John DeLorean, division general manager, isn't known, at least, not publicly. The press release says "there are no plans for its production . . ."

But wait! It also says, "The design of a truly practical mid-engined sports car has been uppermost in the minds of the Corvette prototype's designers and engineers. With this dramatic design, the proposal has been carried very close to reality."

How close that is, nobody knows. The Chevrolet people who hope to make the car a production car, the next Corvette, perhaps the 1972 Corvette, have done their share. They hope the response will be loud enough to persuade the doubters that the car will sell, and is worth selling in terms of prestige and showroom traffic. Let's hope the voice of the enthusiast is heard. ■

CAR LIFE'S ROAD TEST COMPARATOR

SUPERCARS

Name	Tested	Engine C.I.D.	Trans.	Rear ratio	¼ mile E.T.	Top speed	Braking	Avg. mpg	Price as tested
Charger R/T	5/70	440	3-spd auto.	3.55:1	14.71	115	18	11.6	$5546
GTO 455	4/70	455	3-spd auto.	3.55:1	14.76	118	25	11.8	$5251
GTO Ram Air 400	4/70	400	4-spd man.	3.90:1	14.60	121	25	8.9	$5057
Olds 4-4-2 W30	3/70	455	3-spd auto.	3.42:1	14.36	116	25	12.2	$5016
Duster 340	3/70	340	3-spd auto.	3.23:1	14.72	120	27	14.8	$3155
Buick GS 455 Stage I	12/69	455	3-spd auto.	3.64:1	14.6	129	24	n.a.	n.a.
Six-Pack Super Bee	7/69	440	3-spd auto.	4.10:1	13.8	117	24	10–13	$4410
The Judge (GTO)	3/69	400	4-spd man.	3.55:1	14.45	124	27	9–11	$4439
Olds W-31 Cutlass	3/69	350	3-spd auto.	3.91:1	14.9	128	30	10–13	$4212
Dodge Super Bee	2/69	383	3-spd auto.	3.91:1	14.73	110	30	10–15	$4036
Fairlane Cobra	1/69	428	4-spd man.	3.50:1	14.9	125	25	10–11	$3945
Dart Swinger	1/69	340	3-spd auto.	3.23:1	14.8	121	22	12–15	$3470

PONYCARS

Camaro Z/28	5/70	350	3-spd auto.	4.10:1	14.51	119	27	11.8	$4518
Cougar Eliminator	4/70	302	4-spd man.	4.30:1	15:8	104	29	10.6	$5048
Barracuda	2/70	340	3-spd auto.	3.55:1	15.0	125	23	13.9	$4095
Dodge Challenger R/T	12/69	440	4-spd man.	3.55:1	14.8	128	27	10.7	n.a.
AMC Javelin SST	12/69	390	3-spd auto.	3.15:1	15.1	120	25	13.4	n.a.
Boss Mustang 302	9/69	302	4-spd man.	3.91:1	14.85	118	30	11–13	$3788
Boss 429 Mustang	7/69	429	4-spd man.	3.91:1	14.09	118	35	9–12	$4868
Corvette ZQ3	7/69	350	3-spd auto.	3.08:1	16.12	126	26	15	$6146
Corvette L71	7/69	427	4-spd man.	4.11:1	13.94	141	28	10	n.a.
440 'Cuda	6/69	440	3-spd auto.	3.55:1	14.01	118	24	10–12	$3931
Camaro SS 396	5/69	396	4-spd man.	3.73:1	14.7	126	27	8–12	$4294
Mustang Mach 1	3/69	428	3-spd auto.	3.50:1	13.90	121	29	9–12	$4139

INTERMEDIATES

Olds Rallye 350	5/70	350	4-spd man.	3.42:1	15.27	122	27.5	13.4	$3814
Torino GT	2/70	351	4-spd man.	3.25:1	15.6	115	21	12.8	$4528
Chevelle SS396	1/70	402	3-spd auto.	3.31:1	15.5	124	26	13.6	$4926
Dodge Coronet 500 Wagon	8/69	383	3-spd auto.	3.23:1	16.0	126	22	13–15	$4833
Chevrolet Kingswood Wagon	8/69	427	3-spd auto.	2.73:1	16.25	124	25	13–15	$5696
Ambassador SST Wagon	8/69	390	3-spd auto.	2.87:1	16.2	121	25	13–15	$5006
Mercury Marauder	4/69	429	3-spd auto.	2.80:1	15.17	126	28	11–13	$4620
Buick Skylark	3/69	350	2-spd auto.	2.56:1	17.8	109	18	14–16	$4004
Plymouth Satellite	3/69	318	3-spd auto.	2.76:1	17.2	113	21	15–16	$3470
Pontiac Tempest	3/69	350	3-spd auto.	3.23:1	18.6	105	28	12–14	$4249
Chevelle Malibu	3/69	350	3-spd auto.	3.36:1	16.1	115	26	10–15	$4539

STANDARDS

Ford LTD	6/69	429	3-spd auto.	2.80:1	16.7	123	28	10–12	$5362
Plymouth Fury III	6/69	383	3-spd auto.	2.76:1	16.7	115	25	11–14	$4529
Dodge Monaco	6/69	440	3-spd auto.	3.23:1	15.5	127	20	9–12	$5421
Mercury Marquis	5/69	429	3-spd auto.	2.80:1	16.3	114	22	11–13	$5731
Chrysler 300	5/69	440	3-spd auto.	3.23:1	16.1	119	24	11–15	$5419
Olds 88 Delta Royale	5/69	455	3-spd auto.	2.93:1	16.6	118	22	9–13	$5036

PERSONAL CARS

Monte Carlo	2/70	454	3-spd auto.	2.73:1	16.2	132	23	12.8	$5139
Buick Riviera	2/69	430	3-spd auto.	3.07:1	16.51	124	23	10–13	$6555
Thunderbird 2-Dr.	2/69	429	3-spd auto.	2.80:1	16.75	126	26	11–15	$6363

COMPACTS

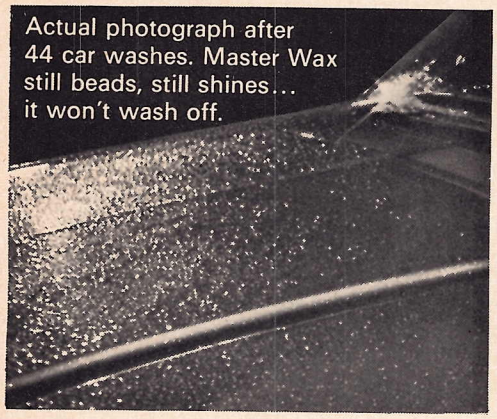
Hornet	4/70	304	3-spd auto.	2.87:1	17.5	112	23	16.3	$3026
Chevy Nova SS350	1/70	350	3-spd auto.	3.07:1	16.5	117	23	13.2	$3807
Maverick	10/69	200	3-spd auto.	2.83:1	19.4	99	22	19–21	$2427

IMPORTS

Toyota Crown	3/70	138	4-spd man.	4.11:1	19.96	96	22	18.6	$2899
Rover 3500S	12/69	215	3-spd auto.	3.08:1	18.9	114	27	18.5	$5398
Volvo 164	9/69	182	4-spd man.	3.73:1	17.63	109	27	16–18	$4340
Fiat 124	9/69	88	5-spd man.	4.10:1	18.6	104	31	22–26	$3150
BMW 2002	9/69	122	4-spd man.	3.64:1	17.4	104	29	22–27	$3400
Opel GT	6/69	116	4-spd man.	3.44:1	17.4	111	31	22–26	$3513

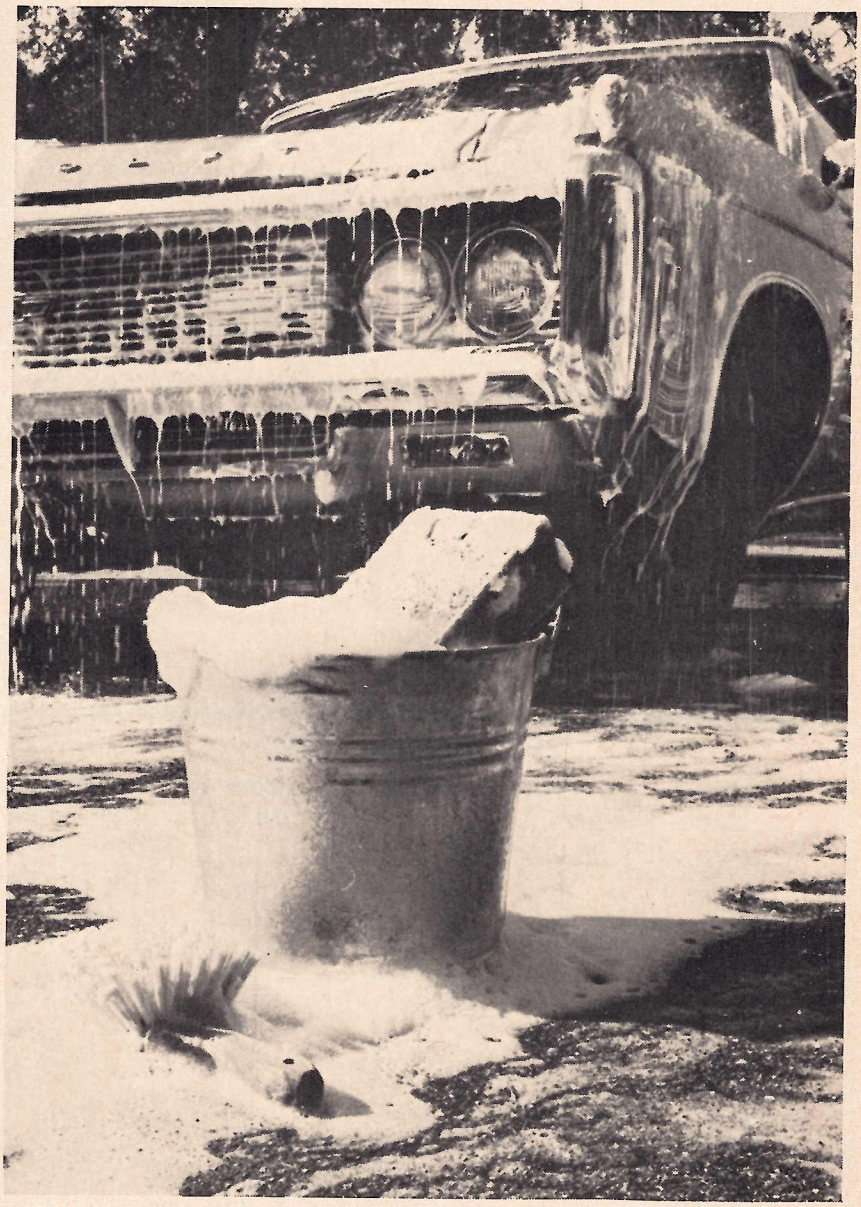
These cars are grouped according to market or performance category. Performance figures are for showroom stock condition. Fuel consumption figures include city and highway driving. The complete test is best, of course. There's an order form for back issues on page 72.

Simoniz® Master Wax® is tougher than the toughest detergent.



Master Wax your car and you'll have a detergent-proof shine. And your first wash will prove it. Get out a bucketful of the toughest detergent you'd use on a car. Scrub and clean all you want. After the rinse you'll find Simoniz Master Wax still beading and shining ...the wax protection just won't wash off!

Master Wax by Simoniz. (Liquid or pre-softened.) Tested through 44 consecutive car washes—without washing off.



Simoniz Master Wax– liquid or pre-softened

Won't wash off!

THINGS YOU'VE ALWAYS WANTED TO KNOW ABOUT WIDE WHEELS & TIRES

(but nobody ever told you 'til now)

THE advantages of wide wheels and tires are well established, and don't bear repeating. The process of putting those tires and wheels on the car, though, is as tricky as the ads are vague.

Each car has its own little problems. What happened on the way to our successful experiment will not be exactly what will happen on another car/wheel/tire combination. But it does show some of the things that nobody talks about.

If more tire is good, then the practical maximum is best. So when the test was still in the talking stage, we decided to put F70 tires on the car, replacing the D70s that came with it.

Wide tires need wide wheels. The widest offered by the factory has a 5.5-in. rim, not enough for the F70 tires. And there was the photographic effect to consider, too, so we went looking for 14x6 alloy wheels, to fit the 4-in./5-bolt mounting pattern of a 1967-69 Barracuda (also used on Valiant and Dart).

There weren't any. Several firms have them on the way, but nobody had such wheels on the shelf. This won't happen with, say, a Camaro or a Mustang, or any of the larger performance cars whose owners have shown a willingness to spend money on their cars, but first choice isn't always available without going to adapters or spacers.

We settled for 14x6 wheels with aluminum centers and steel rims, from Rocket Wheel Industries. Good wheels; the right size, with matt gray spokes and polished rims. But not what we started to get. The same thing happened on our Boss Maverick (Oct., 1969 issue). So we have a moral: You don't always get what you want.

Putting the tires on the wheels was the worst part of the project. Special wheels need special handling. A tire mounting machine will work, but it must have a fitting, so the mounting surface is bolted to the machine. Otherwise, if the wheel moves about under the pressure of squeezing the tire on, the wheel center can be chipped.

Most of the shops dealing in aftermarket wheels or wide tires will have the equipment needed, or be able to refer you to someone who does. Take advantage of the experts, even if the expert fee is $3 per wheel.

We couldn't. The tires were shipped from the factory to a local outlet. The store had instructions. Don't just hand the tires over. Install them.

Can't blame the factory for this. The tire company had to be sure that the tires were properly mounted. But the tire store wasn't used to alloy centers. They had the required fitting, so they dragged it out of the storeroom and tried it.

They chipped one wheel. No structural damage, merely a few chips from the inner edge. But it took some of the luster from the project.

Too bad, they said, but we told you we didn't like to work with special wheels.

Too bad, said the wheel makers, but we told you to take the job to a shop with experience in mounting tires on special wheels.

Moral: Before you buy the wheels, be sure that you have a shop lined up. It must have the fitting for the aluminum centers. Its employees must know how to use the equipment. Even the best shops are reluctant to make promises, so you'll be taking a chance anywhere. But be certain your set of wheels isn't being used for on-the-job training.

So the tires were on the wheels, and the wheels were on the car. The car wouldn't turn left. The outside of the right front tire rubbed against the front of the fender.

You may have noticed that we were exceeding our own limits, that the maximum tire size for the 1969 Barracuda was listed in the June, 1969, CAR LIFE as E70, but we were using F70.

We took careful measurements first.

TIRE DIMENSIONS

TIRE SIZE	TEST RIM SIZE IN.	DIAMETER IN.	SECTION WIDTH IN.	TREAD WIDTH IN.
D70-13	5.5	24.34	8.00	NA
D70-14	5.5	25.54	7.85	6.12
E70-14	5.5	26.00	8.05	6.28
F70-14	5.5	26.48	8.30	6.47
G70-14	6.0	27.08	8.75	6.83
H70-14	6.0	27.78	9.10	7.10
C70-15	5.5	25.25	7.50	NA
D70-15	5.5	25.67	7.70	NA
E70-15	6.0	26.62	8.10	6.08
F70-15	6.0	27.16	8.35	6.26
G70-15	6.0	27.70	8.60	6.45
H70-15	6.0	28.36	8.95	6.71
E60-15	7.0	25.50	9.10	7.70
F60-15	7.0	25.94	9.40	8.15
G60-15	7.0	26.44	9.70	8.42

Dimensions are Minimums, Govt. Standards Allow 7% Oversize.

All Test Rim Sizes are those used in Govt. Test Except 60 Section Series.

The F70 was fine. Plenty of space inside the fender, clearance for the suspension, the tires wouldn't rub when the car leaned on turns.

All we forgot was that front tires do not swivel about their contact patches. They orbit around the kingpin, that is, when the right tire turns left, it also moves forward. Right into the fender, in this case. (Why didn't the left wheel rub on right turns? Because the right wheel is ahead of the left wheel, or the left fender ahead of the right fender. Very odd. But it didn't rub.)

A gingerly trip to the body shop followed. The owner knew what we needed and was ready. He does more work modifying fenders than he does straightening them. The lower edges of the front wheel openings were trimmed back and rolled under, then covered with the original chrome trim. You can't tell that anything's been done, except that the wheels look even more muscular than before.

But that was a $44 expense we hadn't planned on. The cost can be even higher. This shop gets $200 for a complete enlargement of a wheel opening. Moral: The chart knows what it's talking about. Don't buy those big tires until you know what will fit, or what will be required to make them fit.

There was a niggling little problem. The new wheels bring new lug nuts, which are not the size of the old ones. The old lug wrench becomes surplus, and you'll need to stop at the parts store for a new one. Don't delay: The new lug nuts must be re-tightened as soon as the car's been driven far enough for them to warm up.

Then to the alignment shop. New tires must be balanced. This is especially true with radials, because they are more sensitive to bumps and noise, and because they are virtually built by hand, which increases the chances of production error.

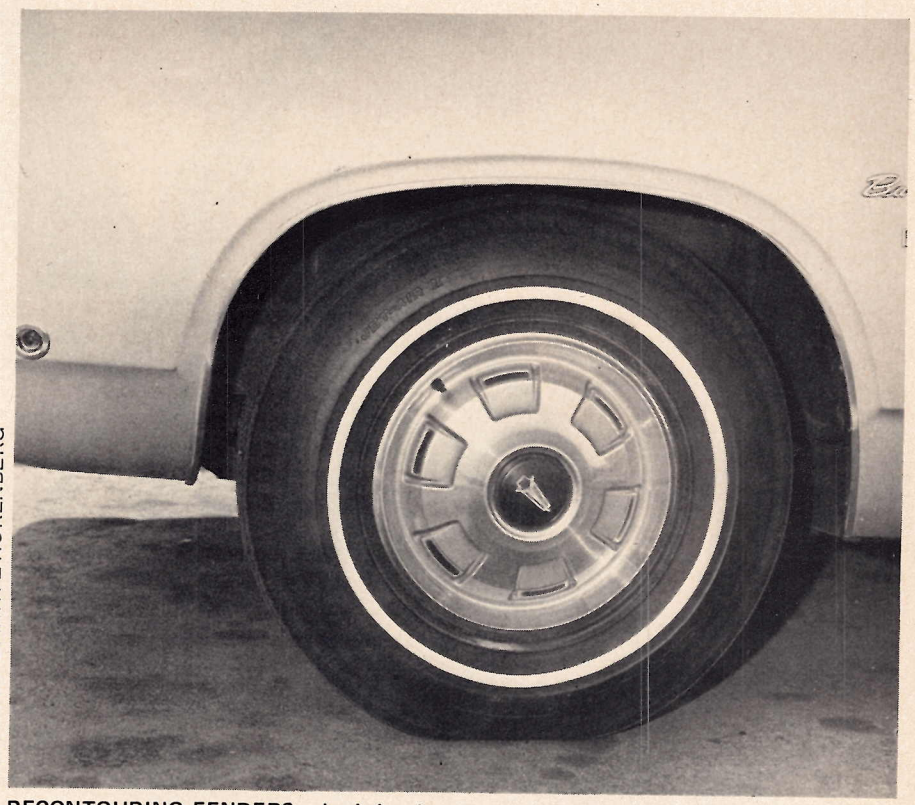
The front end was re-aligned.

All new tires should be balanced. And it never hurts to have the front suspension checked and aligned. But you can add $26 to the price of the wheels and tires.

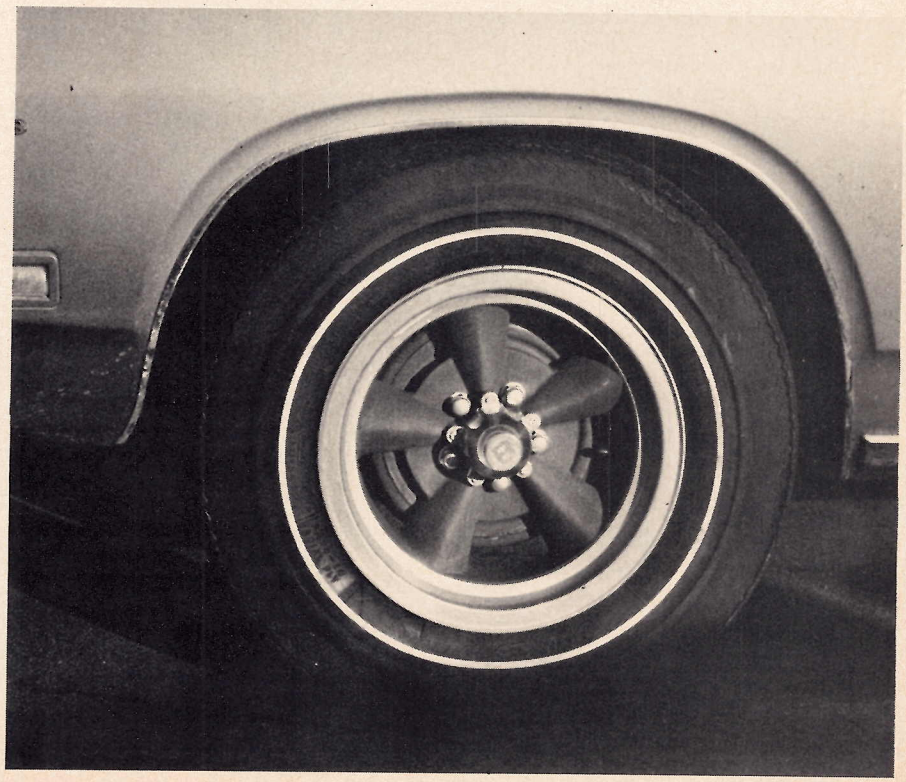
Finished. Everything was all right. The project was well worth the time and money, even the time and money that hadn't been anticipated. This case history is not here to dissuade or discourage anybody who wants to improve his car by going the wide wheel and tire route. But you should know what's involved before you start.

BROKEN edge of wheel came from careless use of mounting machine.

PHOTOS BY DARRYL NORENBERG



RECONTOURING FENDERS solved the clearance problem. The change isn't obvious until you compare a stock Barracuda, top, to the modified version.



He agreed to tell how our radials perform at high speed.

We agreed not to tell his name.

This is a true story about a tire almost too good to be true. A tire that's 33% stronger than our fiberglass-belted tire. Gives 40,000 miles or more on a set. And costs less in the long run.

The story's from a state trooper. A man who should know what he's talking about. He's a professional driver. He's earned a license to drive at racetrack speeds on state highways.

We can give you his story but not his name. Because neither the trooper nor his state can lend their names to any commercial product. So his face is masked; his uniform, disguised.

"Last summer I was working the canyon highway. That road curves and twists all over the place.

"One day this speeder passed me going in the opposite direction. By the time I made a U-turn, he had quite a lead. To catch up, I did 120 in some stretches. Probably 75 on the tightest curves. I really expected the tires to slip. But they never did.

"I finally caught the guy. But I wouldn't have tried without those radials. I'm definitely going to get a set for my own car."

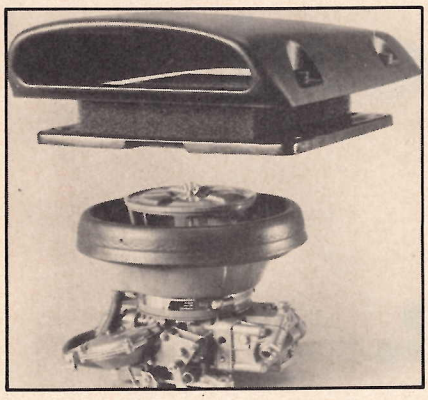
You can hear the same kind of stories from troopers across the country driving on B.F. Goodrich Radials. Driving as many as 50,000 high-speed miles a year. These are exactly the same tires you can buy. Of course, you'll seldom need the maximum performance troopers need, even for short periods of time. But it's nice to know these tires can deliver it.

You know how radials are built. So you know why they're better. The newest BFG Radials, for example. We call them *Lifesavers*. The sidewalls flex, keeping all the tread on the road all the time. And there's a Dynacor® Rayon Cord belt under that wide, beefy 70 Series tread for extra strength and mileage. 33% stronger than even our own fiberglass tires. And because you'll get 40,000 miles or more on a set, they're even a better buy.

Lifesavers corner better. Take curves better. Stop quicker. They handle better at high speed than our fiberglass tires. And because they're made with Dynacor rayon, they run cooler. All in all, they're the best tires we've ever made. BFG *Lifesaver* Radials. They're like no tires you've ever ridden on. They're the tires your life should be riding on.

The new BFG Lifesaver Radials.
Your life should be riding on them.

ENGINEERS AT WORK.



COLD AIR SCOOP

Trend Setter Products of Detroit, made their first big splash in the automotive aftermarket with "Sidewinders" —outboard exhausts for pony cars.

Their second major product is their new Frigid Air hood scoop. Trend Setter tested various air scoops using flex hoses and found that the ridges inside the hoses heated the air, reducing its advantages.

The Frigid Air scoop dumps air directly into the car, keeping it cold. A rubber lip seals off the air intake from the rest of the hot underhood air, ensuring that the incoming air stays cold.

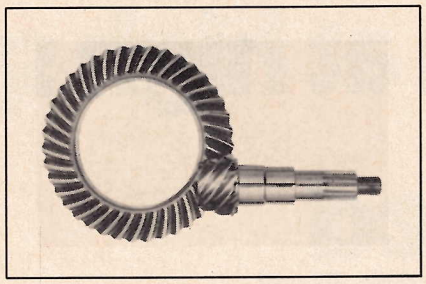
The design of the scoop uses polypropylene and Cycolac, a material developed by Borg-Warner. It won't rust, chip or crack under extreme temperatures.

Another feature is a high porosity open-cell foam element which can be easily taken out, cleaned and re-used.

Also unique is the way the Frigid Air scoop is attached. Special adhesive strips come with the scoop. Once you've lined up where you want it, just punch a hole in the hood, drop the scoop and it is permanently bonded to your car.

Trend-Setter won't promise a 10% dyno increase in horsepower with their scoop, but says there is a measurable increase at higher speeds. This could be just the ticket for '70 Camaro owners, stuck high and dry without last year's Super Scoop hood . . .

For information, write Trend Setter Products, 12171 Grand River, Detroit, Michigan 48204.

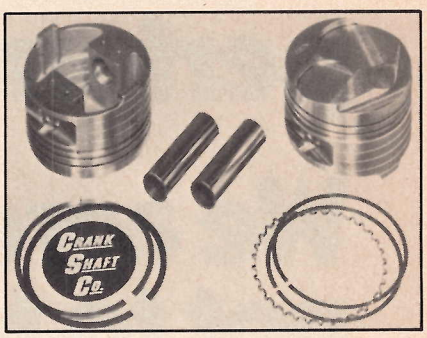


RING AND PINION

Schiefer Mfg. Co. has designed a new Trans-Torq ring and pinion gear set which will handle the stress and loads imposed by modern high-performance engines and the toughest competition. The Trans-Torq ring and pinion set is said to provide smoother, harder gear surfaces, reduce drive line noise and assure highly improved bearing angularity by the incorporation of ground pinion shaft threads.

For further details write to:

Schiefer Manufacturing Co.
508 Monterey Pass Road
Monterey Park, Calif.

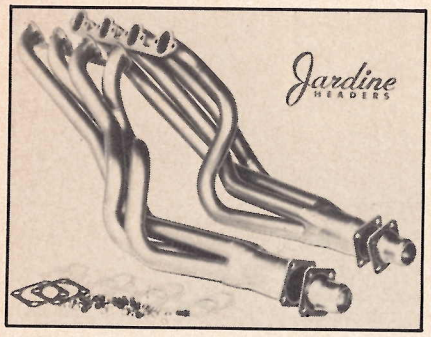


BOSS PISTON

Crankshaft Co., originator of the Slant-Slot Forged Piston for Fords, has just released a new piston for the Boss 302 Ford engine. The new piston is ultra-light, forged from prime material, and machined to exacting standards by Crankshaft Co. The 12.5:1 compression ratio piston is performance tested for both street and street/strip use. New wrist pins are included with each set ordered.

For further information, write to:

Crankshaft Co.
1422 S. Main St.
Los Angeles, Calif. 90015

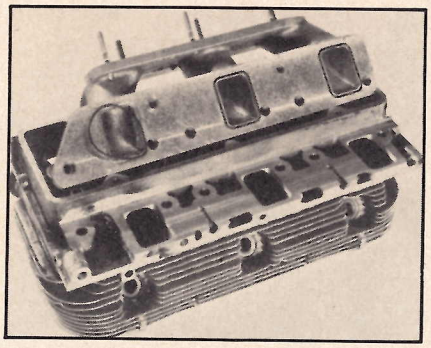


429 WEDGE HEADERS

Jardine Header Company has introduced a set of 4-tube, equal length headers for the 1970 Cobra, Torino and Mercury Cyclone with the 429 wedge engine. The header design was formulated after extensive dyno testing. Like all Jardine Headers, the 429 wedge headers are guaranteed against defects in materials and workmanship for two years. They come with gaskets, bolts and street/strip hook-ups at no extra cost. (A special bracket is available to allow the use of these headers with power steering.)

For more information write to:

Jardine Header Company
7565 Acacia
Garden Grove, Calif. 92641



CORVAIR LIVES:

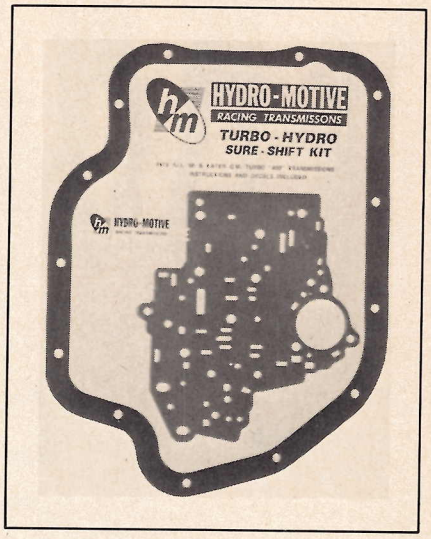
Just in case any of you out there were turned on by Paul Hadley's VW-powered Corvair last month, we'll tell you about Crown Manufacturing, producer of hop-up equipment for Corvairs, to turn your 140 bhp 'Vair flat-six into a 260-bhp screamer.

Crown's kits range from camshafts to the ultimate in carburetion—two triple-throat Weber carbs on top of custom intake manifolds.

Crown says that there are three stages to the Crown Weber conversion package: Head modification, new manifolds and the big 3-barrel carbs. They sell all the parts separately.

Remember Corvair turbochargers? Crown stocks them, too, with a kit that can get a 'Vair mill pumping out 300 bhp! Crown also has kits to help you install a Corvair into a Porsche or VW.

You'll find it all in Crown's new catalog, available for $1 from Crown Mfg. Co. Inc., 858 Production Place, Newport Beach, Calif. 92660.

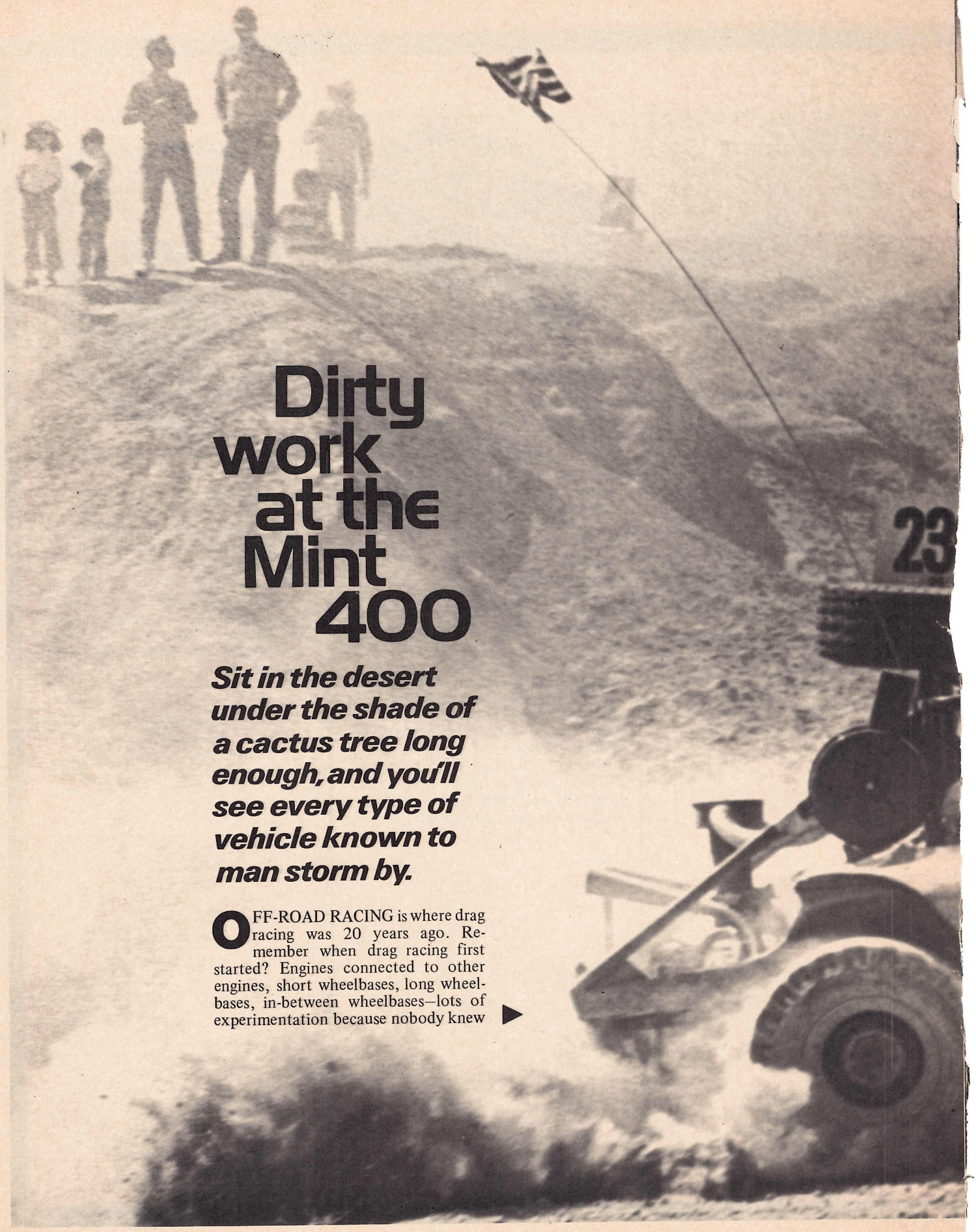


GM SURE SHIFT

Hydro-Motive Co. has introduced a Sure Shift Kit for GM performance cars. The kit includes a valve body, pan gaskets, and instructions. It keeps the automatic shift pattern, provides for positive shifting to any gear and can be used with all 1965 to '70 GM Turbo Hydra-Matic and Turbine 400 transmissions.

Write to:

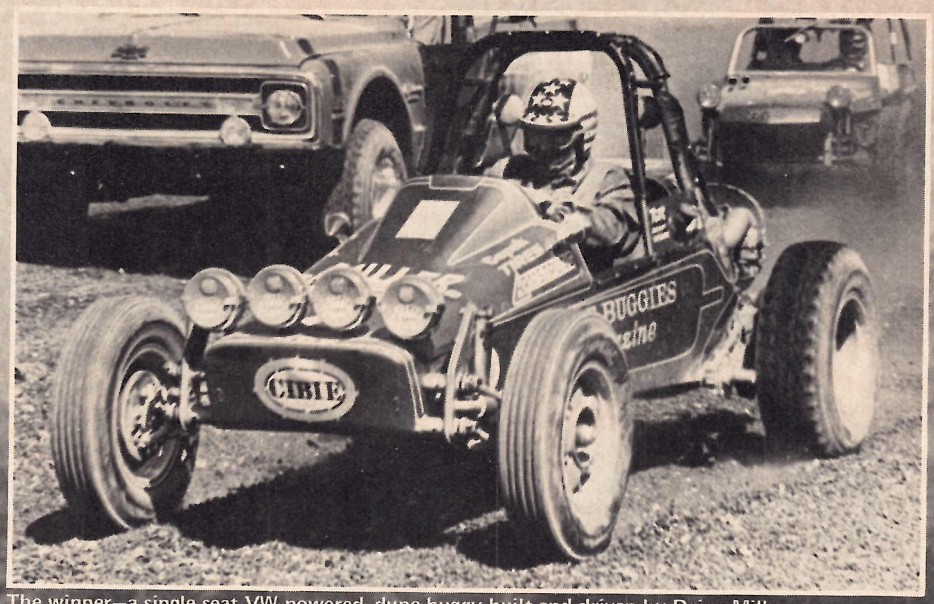
Hydro-Motive
1851 East 95th St.
Chicago, Ill. 60617



Dirty work at the Mint 400

Sit in the desert under the shade of a cactus tree long enough, and you'll see every type of vehicle known to man storm by.

OFF-ROAD RACING is where drag racing was 20 years ago. Remember when drag racing first started? Engines connected to other engines, short wheelbases, long wheelbases, in-between wheelbases—lots of experimentation because nobody knew ▶



The winner—a single seat VW-powered dune buggy built and driven by Drino Miller. Sponsor is Dune Buggies and Hot VWs Magazine.

"Who says AMC isn't gutsy? I'll show 'em," says this AMX driver.

PHOTOS BY DAVE GOOLEY

"Rat Patrol, where are you?" seems to be the question on the minds of these 4 x 4 drivers.

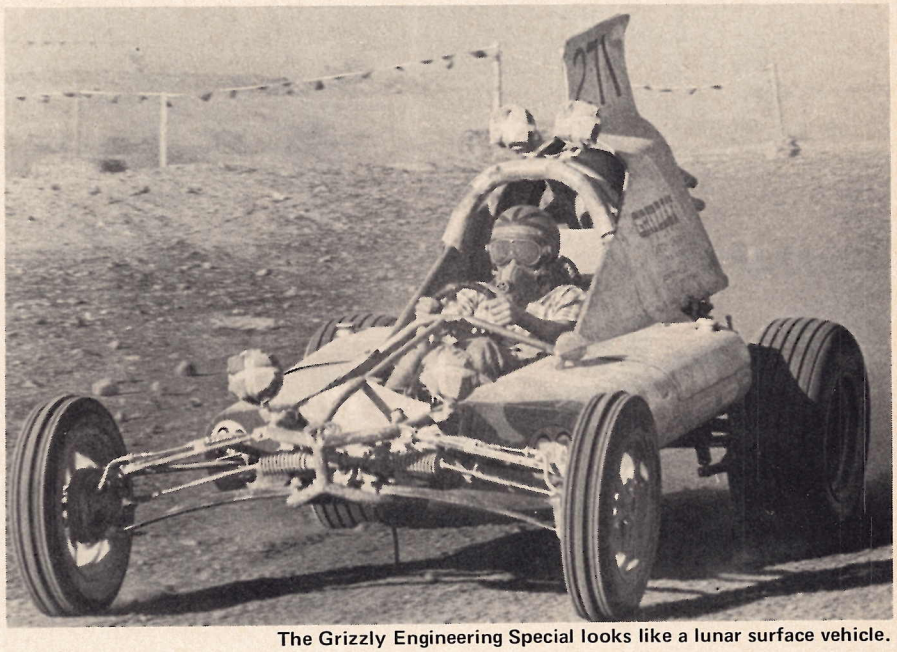
The dreaded Fuzzy Hornet, driven by ex-Indy champ Rodger Ward, didn't get through the first 50-mile lap.

Farm implement front tires, staggered block rear treads seemed to be the preferred combo among the buggy crowd.

Just finishing one lap was a triumph. Glock & Glock completed six laps, coming in 31st overall.

The driver of this mighty mite seemed to have plenty of cargo space. Wonder if it's for rent?

We would like to nominate this Valiant for the "Highboy of the Month" award.



The Grizzly Engineering Special looks like a lunar surface vehicle.

Mint 400

continued

what would win.

Well, that's the way it is in off-road racing. Everybody knows who will take first place—one of the custom-built tube frame single seaters mistakenly called "dune buggies" for lack of an appropriate generic term.

But, in the other divisions, like 2-wheel drive or 4-wheel drive sedans, there's still no hard and fast precedent on who will win. That's why this year's Mint 400 drew the strangest crop of contenders ever to drive under the desert sun.

Some were in stock-looking VWs with big tires. Others were in war surplus Army trucks. Some came in cut-down passenger cars, hardly recognizable for all the tubing, tires, lights and roll bars.

Out of 293 entries, only 12 cars made it over the course's eight 50-mile laps. The winner, in a VW-powered single seater, was Drino Miller of Miller-Havens in Costa Mesa, Calif., a shop that builds off-road vehicles. Miller and co-driver Vic Wilson made the 400 miles in 12 hours with the second place team finishing only two minutes behind them.

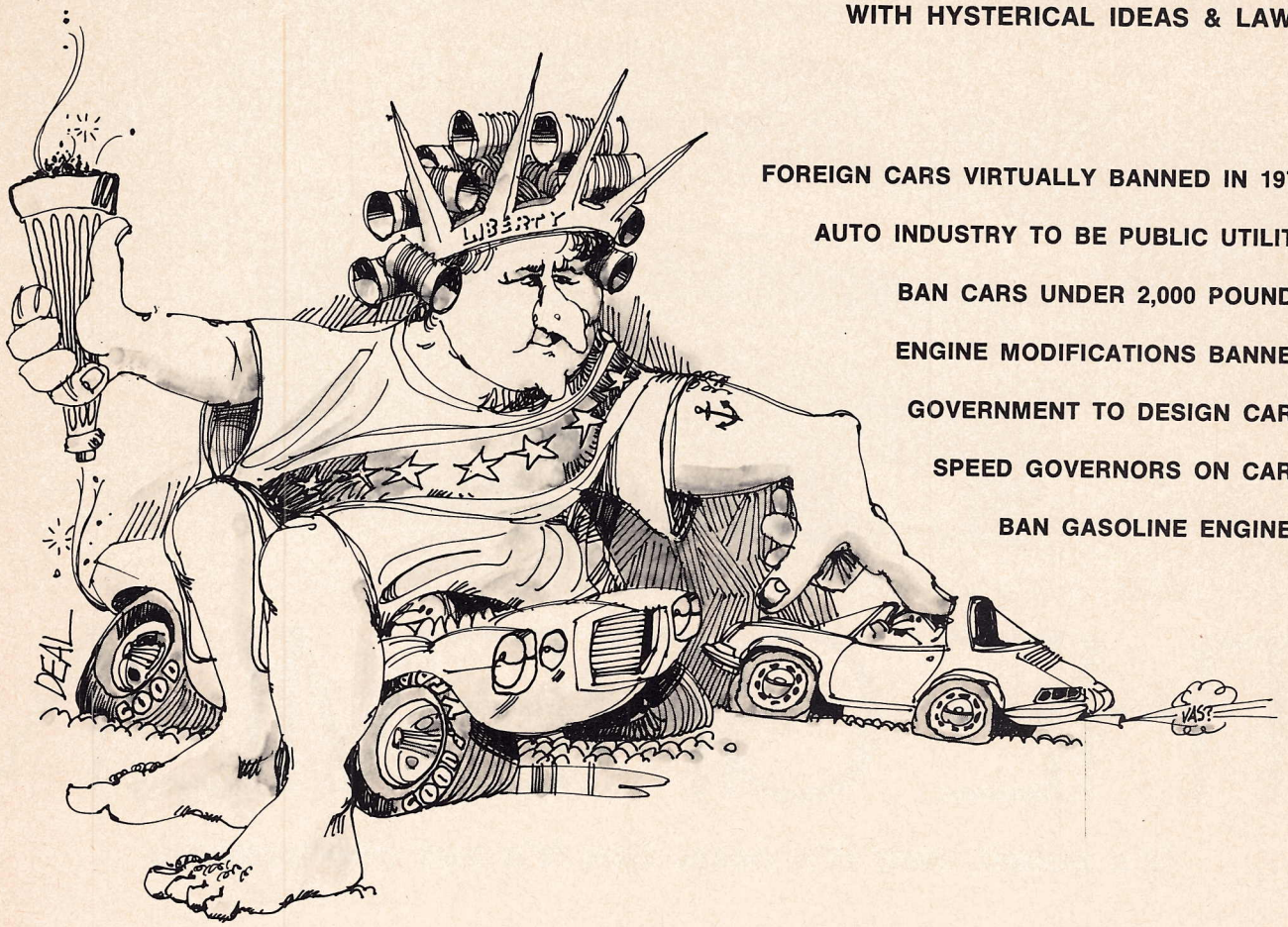
In the production passenger cars division, a VW bug driven by John Harley and Mike Cannon finished first and in the 2-wheel drive utility class Donnie Beyer and Don Richardson thundered into first with their CJ-5 Jeep.

The winning bikers were Mike Patrick and Phil Bowers, alternating stints on a brand new Yamaha 360 two-stroker, one of the first in the U.S.

The overall winners, Miller and Havens, collected a trophy plus $6000 for their first place win in the dune buggies division. A similar amount plus an average of $1500 in contingency awards went to the leaders in the other three categories. ■

the DO-GOODERS are killing your car

WITH HYSTERICAL IDEAS & LAWS



FOREIGN CARS VIRTUALLY BANNED IN 1975

AUTO INDUSTRY TO BE PUBLIC UTILITY

BAN CARS UNDER 2,000 POUNDS

ENGINE MODIFICATIONS BANNED

GOVERNMENT TO DESIGN CARS

SPEED GOVERNORS ON CARS

BAN GASOLINE ENGINES

FACTS:

⅔ of smog is not from cars.

1968 and newer cars already emit 70% less fumes.

These controls cost $50 per car, ½ BILLION DOLLARS annually from YOUR pockets. Controls for 1975 standards will cost $200 per car, TWO BILLION DOLLARS annually from YOUR pockets. This money would buy MORE CLEAN AIR by controlling factory emissions.

½ of highway deaths are caused by drunks. Most other accidents are caused by bad driving. Little is being done in emergency driving training, better driver tests, getting drunks off the highway.

Safety gadgets cost $100 per car. Some of them are not worth the money. Shoulder straps are so inconvenient that only a few per cent of YOU wear them. More convenient shoulder restraints are available.

Better vehicle inspection is needed to reduce smog from older cars, to prevent accidents caused by mechanical defects, and to provide quality checks on automotive service.

Yes, there are problems, but these can be handled with reason, not hysteria.

MOTORISTS UNITED is a new ENTHUSIAST-ORIENTED motoring organization whose purpose is to SPEAK for motorists and influence the government for the benefit of motorists and the public.

MOTORISTS UNITED are FOR safe, fast, enjoyable transportation, clean air, water and roadsides. Panic programs in Washington, D.C., and Detroit are NOT the answer. They cost YOU BILLIONS OF DOLLARS and cause problems on YOUR cars.

Directors of **MOTORISTS UNITED** are leaders in engineering, advanced driving, safety, smog control and automotive service; subjects neglected by the other auto clubs. Directors are paid minimum consulting fees. Frequent polls of the membership are taken so YOUR views can be presented.

SEND NO MONEY

Yes, I want to know more about MOTORISTS UNITED.

Fill out, clip and mail to:

MOTORISTS UNITED
Box 384
Washington, D.C. 20044

or: **MOTORISTS UNITED**
Box 2042
Palos Verdes, Ca. 90274

name _____

street _____

city _____ state _____ zip

THE GREMLIN

It's small, and it's cute. But it's not economical.

WE ARE beset, here in the car-testing business, with cliches, with controls falling readily to hand, cars clinging leechlike to the road, testers wishing the car could stay with them forever, and so forth. On the present occasion, we will demolish one of the oldest techniques in the trade.

"I dunno," said the staffer assigned to go get the test Gremlin, "I read all about the car at announcement time, and I don't think I'm going to like it."

This was on a Friday afternoon. On Monday morning, he drove into the parking lot. The Gremlin is a new car, the first of Detroit's small cars, and the rest of the staff gathered 'round for his impressions:

"I don't like it."

You thought maybe he would have been won over by the Gremlin's pixie charm? Imagine yourself driving the Corvette prototype or Ford's Pantera, the dream car of the day, with looks, handling, power, comfort . . . and nobody notices it.

Turn it around. The Gremlin, said our skeptic . . . "understeers. I came into a 35-mph freeway exit at 40, and the front end pushed, I was close to the center line and got the front wheel cranked on, and the front caught. The rear wheels let go and I nearly spun it, just getting off the freeway . . . The seat's too close to the wheel, the mpg isn't going to be very good.

"Every time I got into traffic, the crowds went wild. They loved the Gremlin. They kept rushing up and asking how much it cost, and where could they get one."

An unspeakable sensation, driving along in a car you have only because you're ordered to drive it, and being regarded as one of the fortunate few.

The group reaction being what it was (more about that anon) American Motors will not lose much sleep over the reactions and figures that follow.

Our test car was no ordinary run-of-the-mill Gremlin. It was The Ultimate Gremlin. We had every Gremlin option available at the time of its introduction, which swelled the price up from a base of $1959 to almost $3000. The options included the bigger six (145 bhp instead of 128 bhp), a 3-speed automatic, bucket seats, wider tires, air conditioning, AM radio and even, are you ready for this, rally stripes. The only option we didn't have, and would've ordered if it had been available back at introduction time, was the HP handling package, which consists of a front anti-roll bar, heavy-duty springs and shocks—all for $18!

The styling was different but you've got to live with the cuteness, too. We found the front view the most mundane——it might best be described as late model electric iron.

When we first got into the car, we found it confining, not because it was so very small, but because the driver's seat simply wouldn't slide back far enough. Let's face it, you don't really carry four passengers around all that often so you ought to be able to slide the driver's seat all the way back. But the Gremlin won't let you. It reserves a few inches of space for the back seat passenger's legs even if there aren't any back seat passengers.

Interior vision is only fair, disappointing considering the amount of glass you see in relation to sheet metal from the outside. The large "sails" or wide

rear quarter panels, obscure the view to the right and left rears but, through the rearview mirror, you get a straight back view that's deeper than any you've seen since Detroit started the fastback trend.

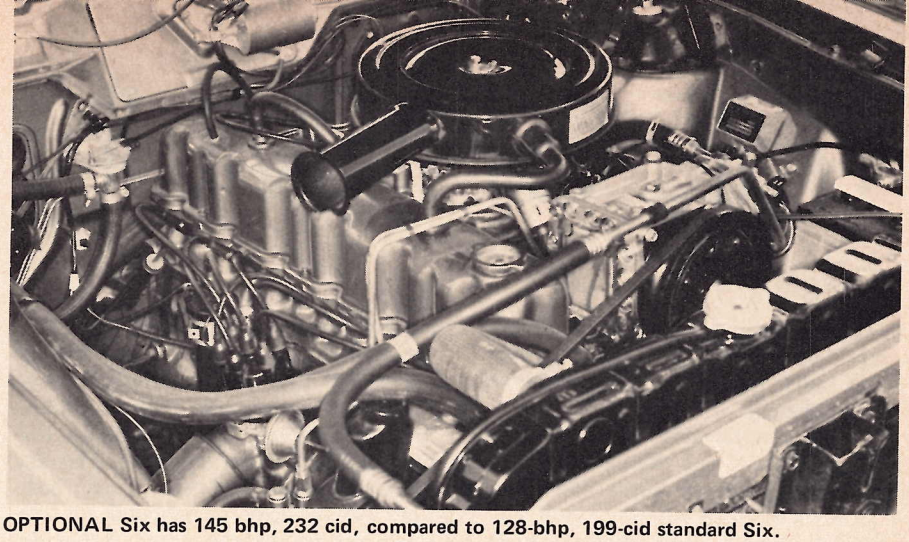
Instrumentation on the Gremlin is practically non-existant. Oh, a speedometer, fuel gauge and water temperature gauge can be found but AMC counts on warning lights to cover the alternator, brakes, oil pressure and high-beam indicator. In our test car, we found the speedometer to be dead-on accurate and the gas gauge to be haywire. In an economy car with such low speed potential, we wish it had been the other way around.

The lift-up rear window, counterbalanced so it's hardly an effort to lift, is ingenious and a first on American production cars. But there's a disappointment in store. Once you've flipped it up, and are about ready to load cargo in, you discover that there's no way to drop the bottom half—the portion that would be called a "tailgate" in an ordinary station wagon. Then you realize—AMC has saved a bundle on production costs by making the window the only access to the back, which means you've got to lift your luggage more than three feet off the ground to clear the tailgate wall. This is a higher liftover height than you'll find in most ordinary wagons.

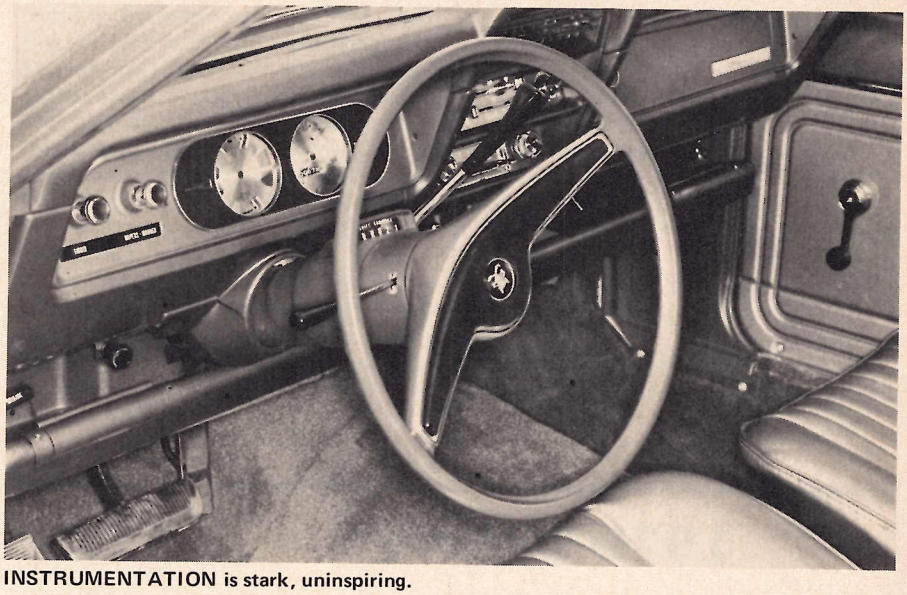
What about cornering? It needs help. First of all, the Gremlin, even with its short 96-in. wheelbase, is nimble but it is rather awkwardly constructed to take advantage of its nimbleness. For instance, the test weight was 3200 lb.—more than the Javelin we tested in our Trans-Am group test. Not only is this extraordinarily heavy for such a small car, the weight is also poorly distributed with 60% on the front wheels and only 40% over the driving wheels. The power-to-weight ratio is also very anemic, enough to make powering into, or out of, a turn an impossibility.

An important part of vehicle control is steering. Our Gremlin had power steering of the variable type, which varied the ratio from 21.7 to 16.5:1. We found the steering rather vague and unrelated to where the tires were actually pointed. More than once we picked a line around a corner, turned the steering wheel to what we thought the line was and found the car swinging too wide, almost coming head-on with traffic in the opposite lane. We aren't asking for super-fast rally-type steering, just a tighter ratio.

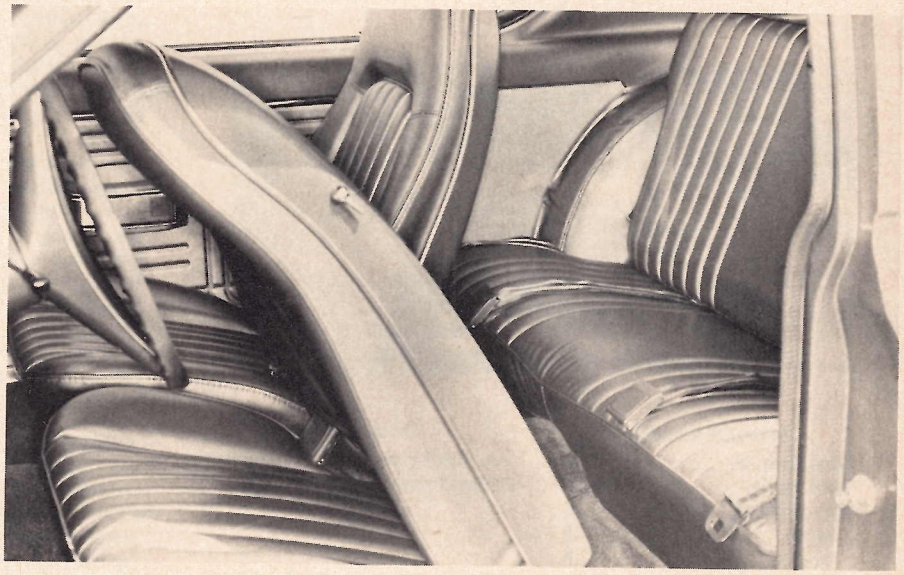
It sounds like we're trying to build a case against the Gremlin. We're not. It is in no way a dangerous car. Its road-holding is equal to the economy cars of the past from AMC. It has adequate power to be able to merge onto superhighways and it doesn't really begin to ▶



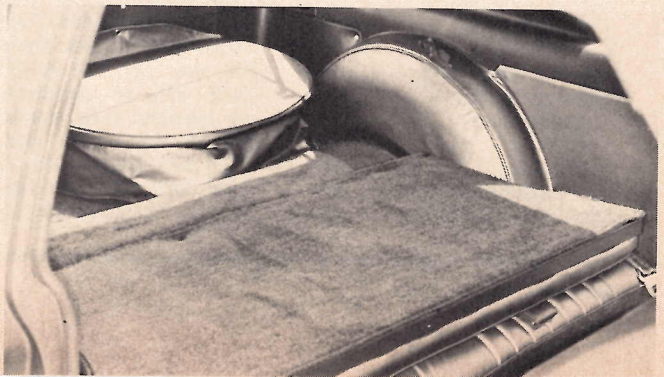
OPTIONAL Six has 145 bhp, 232 cid, compared to 128-bhp, 199-cid standard Six.



INSTRUMENTATION is stark, uninspiring.



LEGROOM for rear seat passengers was minimal, but we did get four people in the car.



GREMLIN'S load bed created by flopping down rear seat back. Tire is inconveniently located—gets in the way of luggage.

THE GREMLIN

continued

dis-satisfy the enthusiast until he attempts to drive it at rates of speed which only typify the non-economy buyers (like us).

On the quarter-mile, the little tyke showed what it had, which wasn't all that much. In three blasts down the strip, we never broke above 73 mph, but did lower our E.T. from a high of 18.79 to a low of 18.60.

For mileage, we got a high of 16.8 mpg. *A high of 16.8!* Yes, we know, it didn't seem particularly economical to us but look again at the dragstrip figures. AMC, in offering twice the horsepower of a VW bug, was aiming for the economy buyer who is willing to trade a few mpgs for that extra burst of power so he won't have to drive white-knuckled on the freeway, hoping he can stay ahead of that big semi storming up on him.

The dictionary defines gremlins as little leprechaun-type creatures that go around messing up mechanical equipment. Well, when we hit the brakes during our first maximum effort stop, we found the gremlin in the Gremlin. The car swerved right and stalled, the rear drums locking up tight. The deceleration rate—22 ft./sec., wasn't bad, but the manner it stopped in was unwieldy to say the least. After six more half-G stops, we tried another maximum effort stop from 80 mph and found that the rear drums still locked and the oil light came on, indicating that oil sloshing in the unbaffled pan wasn't going to help the engine last any longer. With all the weight up front, the Gremlin needs discs up front for a start. Maybe in '71 . . .

Now, for compliments. The Gremlin's 3-speed "Shift Command" automatic was very brisk in its operation. If you floored it, it would shift down quickly, then upshift again as you lifted your foot off the throttle. It sort of reminded you of Chevy's old 2-speed Powerglide the way it gets it on, then backs down. This ought to make the Gremlin owner feel like he has the power under the hood when he needs it—something you don't feel in a VW where you're flat out all the time.

Even though the Gremlin was developed specifically to penetrate the VW market, we doubt that it will dent VW's sales greatly Why? Because part of the VW cult's fanaticism is due to the fact that the VW is a *foreign* car, not made in apple-pie Wisconsin, like the Gremlin. There's status there, someplace, and there's another sort of reverse status dichotomy among VW buyers that makes it okay to drive an el cheapo VW home ("See, neighbors, I'm frugal, nobody sold me a bundle of options.") yet, when you drive a new domestic car home, you're not considered frugal but downright *cheap* if you don't load it up with power steering, radio, carpeting, vinyl seats, whitewalls . . . ad infinitum. It's the kind of problem that turns the hair of marketing men gray.

Enough of compliments. The throttle pedal should be mentioned, because it stuck. Not on full throttle, but it wouldn't go down smoothly. Instead, it

1970 GREMLIN

AMC

DIMENSIONS

Wheelbase, in.	96
Track, f/r, in.	57.46/57
Overall length, in.	161.25
width	70.58
height	51.8
Front seat hip room, in.	22.5 x 2
shoulder room	54.9
head room	37.9
pedal-seatback, max.	36
Rear seat hip room, in.	54
shoulder room	52.9
leg room	29.5
head room	36.4
Door opening width, in.	47
Trunk liftover height, in.	37

PRICES

List, FOB factory	$1959
Equipped as tested	$2995

Options included: 145-bhp/232-cid 6-cyl., $45; auto trans., $195; bucket seats, custom interior, $90; wsw tires, $32; visibility group, $35; air conditioning pkg (includes power steering, B78-14 tires, solex glass), $461; side stripes, $25; AM radio, $62; fuel tank vapor emission control system, $15.

CHASSIS/SUSPENSION

Frame type: Unitized.
Front suspension type: Independent by s.l.a., coil springs, shock absorbers.
ride rate at wheel, lb./in. 100
anti-roll bar dia., in none
Rear suspension type: Hotchkiss drive, leaf springs, shock absorbers.
ride rate at wheel, lb./in. 105
Steering system: Variable-ratio recirculating ball.
overall ratio 21.7-16.5:1
turns, lock to lock 3.2
turning circle, ft.
curb-curb 32.7
Curb weight, lb. 2825
Test weight 3200
distribution (driver)
% f/r 59.5/40.5

INSTRUMENTATION

Gauges: Speedometer, fuel level, water temperature.
Warning lights: High beam, oil pressure, brake system, parking brake, alternator.

WHEELS/TIRES

Wheel rim size 14x4. 5J
std. size 13x4. 5J
bolt no./circle dia. in 5/4. 5
Tires: Goodyear Polyglas
type Belted Bias
size B78-14
std. size 6.00-13
Test inflation 30/30

ENGINE

Type, no. of cyl. I-6
Bore x stroke, in. 3.75 x 3.50
Displacement, cu. in. 232
Compression ratio 8.5:1
Fuel required regular
Rated bhp @ rpm 145 @ 4300
equivalent mph 112
Rated torque @ rpm 215 @ 1600
equivalent mph 41.8
Carburetion: Carter 1x1V.
throttle dia., pri. 1.69
Valve train: Overhead valves, rocker arms, pushrods, hydraulic lifters.
valve dia. in.
int./exh. 1.787/1.406
lift, in. int./exh. 0.381/0.381
Cam timing
deg., int./
exh. 12.5-51.5/53.5-10.5
duration, int./exh. 244/244
Exhaust system: Single with one reverse flow muffler.
pipe dia., exh./tail 1.88/1.75

DRIVE TRAIN

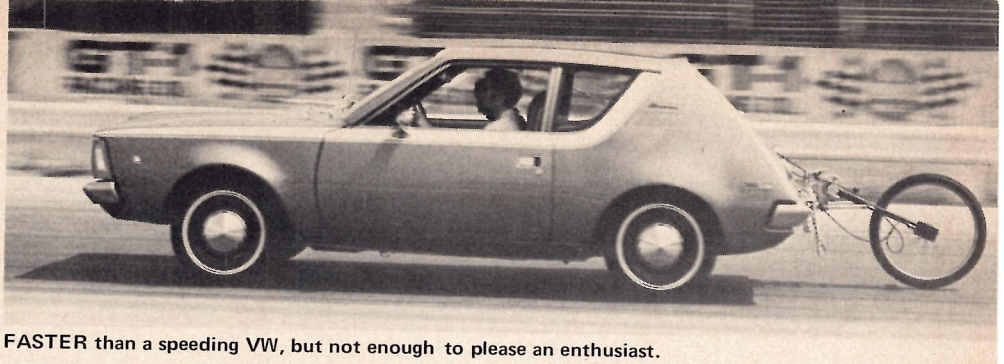
Transmission type: Three-speed automatic.
Gear ratio
3rd (1.00:1) overall 2.73:1
2nd (1.45:1) 3.96:1
1st (2.39:1) 6.53:1
1st x t.c. stall (2.00:1) 13.06:1
Shift lever location: Column.
Differential type: Hypoid.
axle ratio 2.73:1

jerked forward in little movements. Doubtless, a different mounting/springs arrangement could make it more flexible.

A final comment concerns tires. We didn't even know they *made* a B78x14 tire until we saw the Gremlin's. With those humpy wheel well flares, there ought to be a way to sneak F70s under there. This might be futile, considering the power available, as the Gremlin can hardly use the rubber it has now.

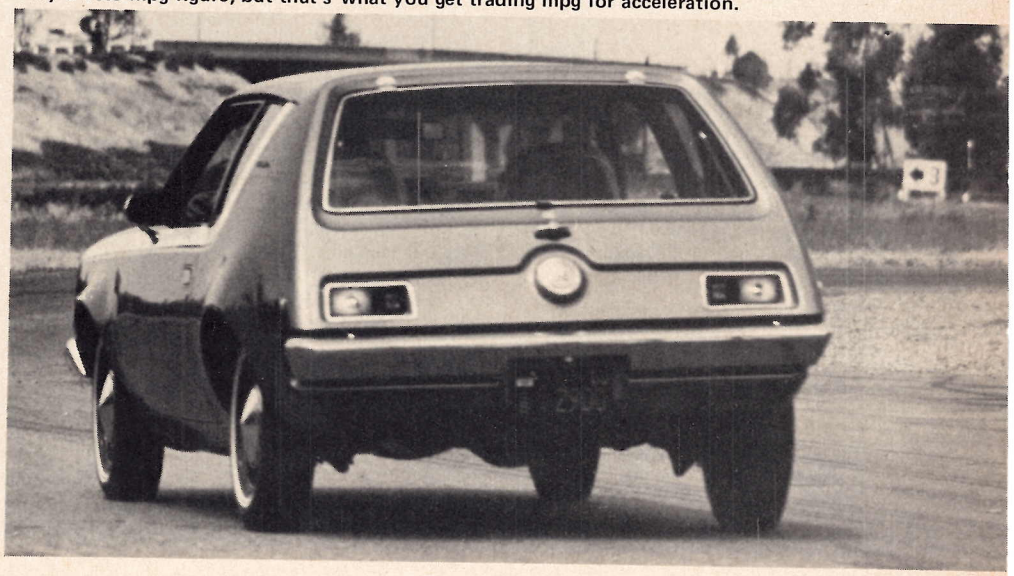
With the introduction of Ford and GM's new small cars, it will be a race, not only of who can sell the most cars with the most options (and, with small cars, the options represent the profit), but who can sell the most cars with the least options *in the VW price range.* If you're going to beat the VW, you've got to do it on its own turf. And the Gremlin isn't really on the same piece of ground.

This may not matter. We had not intended to test the Ultimate Gremlin. The car you see here is a substitute. We ordered a routine Gremlin, but before we got it, a dealer had it for preparation. And a customer came in, and he saw the car, and he was so stricken with its pixie charm, that the dealer sold him our test car, for full list. Pixie charm may be all the Gremlin needs. ■

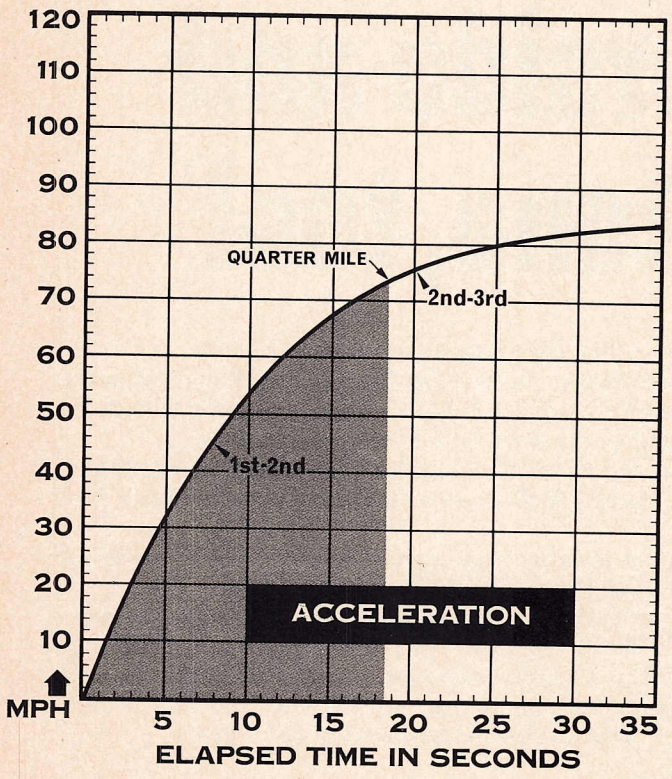


FASTER than a speeding VW, but not enough to please an enthusiast.

AN economy car, the Gremlin mustered up only a 16.8 mpg figure, but that's what you get trading mpg for acceleration.



CAR LIFE ROAD TEST



CALCULATED DATA

Lb./bhp (test weight)	19.5
Mph/1000 rpm (high gear)	26.1
Engine revs/mi. (60 mph)	2300
Piston travel, ft./mi.	1340
CAR LIFE wear index	30.8

SPEEDOMETER ERROR

Indicated	Actual
30 mph	30
40 mph	40
50 mph	49
60 mph	60
70 mph	69
80 mph	80

CAPACITIES

No. of passengers	4
Luggage space, cu. ft.	6
Fuel tank, gal.	21
Fuel consumption, mpg	16.8

MAINTENANCE

Engine oil, miles/days	6000/180
oil filter, miles/days	6000/180
Chassis lubrication, mi.	24,000
Antismog servicing: Replace PCV/ 12,000; tune up/12,000	
Warranty period, mo./mi.	12/12,000
all parts including drivetrain.	
Spark plugs: Champion N-14Y.	
gap, in.	0.033-0.037
Basic timing, deg./rpm.	3 BTC
Ignition point gap, in.	0.016
cam dwell angle, deg.	31-34

PERFORMANCE

Top speed (3640), mph	95
Test shift point (rpm) @ mph	
2nd to 3rd (4125)	75
1st to 2nd (4125)	45

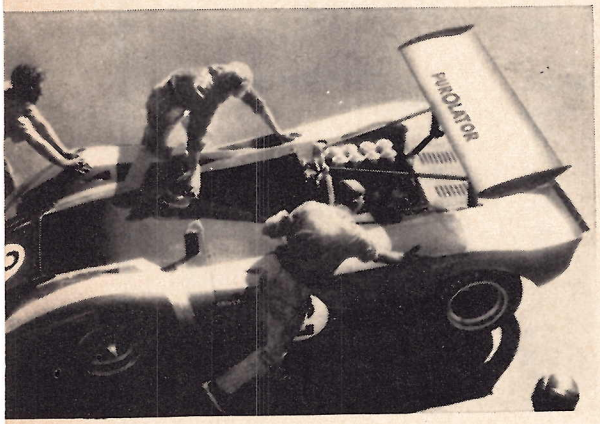
ACCELERATION

0-30 mph, sec.	4.7
0-40 mph	6.7
0-50 mph	9.2
0-60 mph	12.5
0-70 mph	16.9
0-80 mph	26.1
Standing ¼-mile, sec.	18.6
speed at end, mph	73.8
Passing, 30-70 mph, sec.	12.2

BRAKING

Type: Cast iron drums, front and rear.	
Front drum, dia. x width, in.	9.0 x 2.25
Rear drum, dia. x width	9.0 x2.0
total swept area, sq. in.	254
Max deceleration rate and stopping distance from 80 mph:	
ft./sec./sec.	22
distance, ft.	430
Rate and distance after six ½-G stops from 80 mph:	
rate, ft./sec./sec.	20
distance, ft.	405
Control loss? Rear brakes locked.	
Overall brake performance	poor

Purolator out-toughs Baja. Riverside and Daytona, too!



It's true—when the going gets tough, the tough get going.

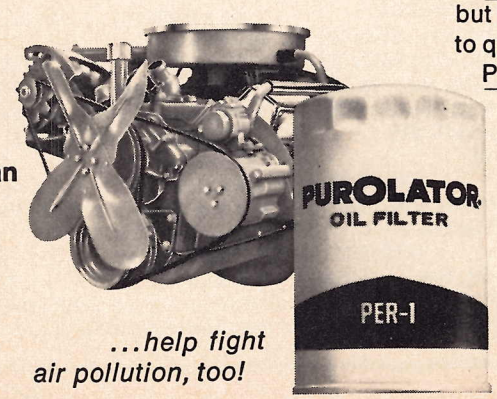
Purolator-Baja. Probably the toughest 1,000 competition miles in the world, on a car-killing route. But Purolator filters out-tough all comers in all classes, and take the win flag in a Ford-built Bronco.

Purolator-Riverside. A fast track against lean, hungry competition, but Purolator air, gas and oil filters win in a Ford that doesn't know how to quit.

Purolator-Daytona. Another gruelling test of endurance at blistering speeds. Other filters wilt—Purolator wins again.

Consistent victories are no accident. Purolator's high-performance filters won't fade on the track or in street driving. Get Purolator *Clean Machine* oil, gas and air filters for your car. They cut air pollution as they increase performance and pick-up. Purolator—the filters *no one* can out-tough.

Keep a Clean Machine



...help fight air pollution, too!

PUROLATOR®, INC.

970 New Brunswick Ave., Rahway, New Jersey 07065

This is the famous Firestone Wide Oval.

The Wide Oval Sup-R-Belt "70"

Drivers who want the same kind of high performance on their street cars as they do from their competition wheels tend to go with Firestone all the way. The raised white letters and the broad muscular tread say this Sup-R-Belt is a tire that can do what it looks like it can do! (Also available with double white stripes.)

Not only can you feel the difference—but you can see it, too. After ordinary tires are guarding a boat dock, your Firestone Sup-R-Belt Wide Ovals will be taking you through bends like you were on tracks. Part of this is the fact that the Wide Oval is a double-belted, bias-ply tire. Part is the extra-wide surface of tread, and part is Firestone's special way of reinforcing the sidewalls and bonding the tread to the body. When you've engineered as many winning sets of rubber as Firestone has, you get to know all the secrets!

This is its new big brother.

The Extra-Wide Oval Sup-R-Belt "60"

Big brother is something to lean on! A full 9 ribs wide to put a footprint on the road like nothing else. Again for long mileage and high impact resistance the Wide Oval "60" is a Sup-R-Belt—our double-belted, bias-ply construction.

The raised white letters and the "half-mile-wide" look make a pretty impressive combination. And as long as it has the name Firestone on the outside, you know it's got the right combination inside.

Stick these big handsome Sup-R-Belt "60's" on all four corners of your car and you are instantly the guy they come to, to talk about tires.

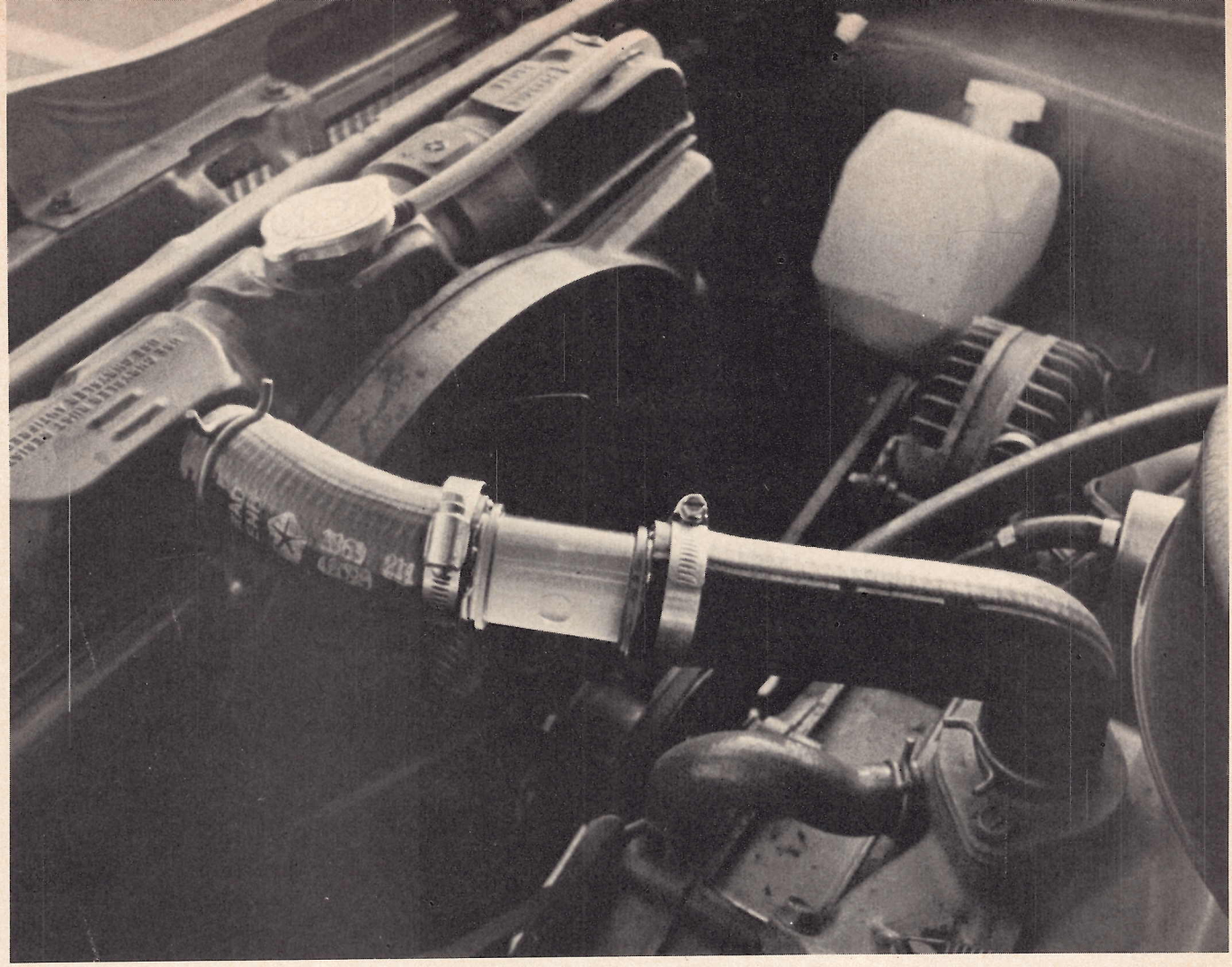
FREE! Firestone's Consumer Tire Guide. Get it at Firestone Dealers and Stores or write: Firestone, Akron, Ohio 44317

Firestone

Strong tires make strong friends.

WIDE OVAL — Firestone TM

60 — Firestone TM



PHOTOS BY SCOTT MALCOLM

THE ENGINE AS TEAPOT

THINK about your radiator for a minute. It holds maybe 18 quarts when topped up. It get hot when the engine's been running. Hot liquids expand. The coolant pushes up, up and finally a pint or so makes its way through the vented cap and ends up on the ground.

Then you shut off your engine and let your car sit. The coolant (like all liquids) contracts as it cools. Soon you have 17.5 quarts where you had 18 before. What's taking the place of the other half-quart? Air.

This is normal. The factories plan for it, by telling you to leave an inch or so of air below the top of the header tank when you check coolant level. Most of the time, there is no problem.

But there can be a problem. Air is no help at all in a water-cooled engine. It can foam the coolant, which decreases the ability of the coolant to carry the heat out of the engine and into the radiator. And air allows the inside of the engine to rust. If there is enough air, the foamed coolant can create an imbalance on the water pump. The pump bearings take a beating, and give up before they should.

Several factories have taken care of this with sealed systems. The overflow tube no longer goes to the ground, but to a reservoir tank mounted near the radiator. The tank has coolant in it. When the engine is running and the coolant expands, air and coolant go to the tank. The inlet is at the bottom of the tank, so the bubbles go to the top and out of the system. When the engine cools and the coolant contracts, only coolant is pulled back into the radiator Every time the engine goes through the heat/cool cycle, the air goes out and the coolant comes back. After a few days, your 18-quart cooling system has the 18 quarts of coolant that it's supposed to have.

Some of the factories—Buick, for example, and Renault—do this. But most of the car makers don't. No criticism implied here, because most of the time the standard system works.

But for those of us who like to be ready for the unplanned, a sealed system sounds like a wonderful idea. And now there is a way to get one, anywhere in the country.

About the time the factories began to work on sealed systems, so did a retired American Motors engineer. He thought the idea through, designed and arranged for production of the needed parts, then he incorporated, and finally he persuaded Sears and Ford Motor Co. to sell the kit You can order one or maybe even pick one up (the brand name is Safe-Gard), at any Sears outlet, or Ford agency parts counter.

The kit is complete. It consists of a reservoir tank, a bracket to hold the tank and self-tapping screws to hold the bracket on the fender well or anywhere there's room for it. (The location is no problem. One customer whose engine room was already crammed with air conditioning, power this, power that, etc., used an extra long

tube and put the reservoir in the trunk.) There is a length of clear plastic tubing; a radiator cap with double seals, a section of clear plastic pipe that goes in the radiator hose and clamps for the pipe.

The installation and operation of the kit are simple, too. Cut a 2-in. section from the radiator hose, and insert the clear pipe. Remove the overflow tubing and replace it with the line from the radiator filler neck to the reservoir tank, punch a hole in the fender well and mount the bracket, pop the tank into place and it's ready.

The clear pipe is a sight tube. That may need some explanation. When the system is in operation, the radiator cap need never be removed, even when the engine is cold. When the radiator is full there are no bubbles in the coolant. When you check the oil level, look at the tube. As long as there are no bubbles showing, everything is fine. There is some evaporation, but it's from the reservoir. Every few months coolant is added to that. Easily done, with the engine hot or cold, because the reservoir isn't pressurized.

To see how this works, we got a kit and installed it on a staff-owned car. In stages.

First was the sight tube, and it showed something right off. With water up to the top of the radiator neck, there was an air bubble at the top of the tube. When the radiator looks full, it may not really be full.

The car was driven from the office to the owner's home, 22 miles away. At the end of the run, coolant was coming out of the overflow hose. No problem. All cars do that. The coolant had expanded, as it must.

The next morning the radiator wasn't full. The level was about half an inch below the neck. All textbook stuff, but we wanted evidence.

For the next step, the reservoir was attached to the fender well and the new tubing run from the filler neck to the new tank. The old radiator cap was left in place. The radiator was topped off, and an inch of water poured into the reservoir. The level was marked. After the drive home, the level in the tank was up an inch. No water on the ground, though.

But when the coolant had cooled, the reservoir still held two inches of liquid and the radiator wasn't full anymore. This is a key point. The stock radiator cap seals the header tank from the filler neck, and that's all it seals. When the coolant contracts, it creates a negative pressure. The pressure is relieved by air that comes in from between cap and filler neck. That's the path of least resistance. The coolant doesn't get pulled back into the radiator, so the reservoir serves merely as a catch tank.

On with the new cap. It's made for Safe-Gard by Stant, one of the best firms in the cap business, and it has two seals, one between header tank and neck and another between neck and rim. So the only way anything, be it air or coolant, can get in and out is through the overflow pipe.

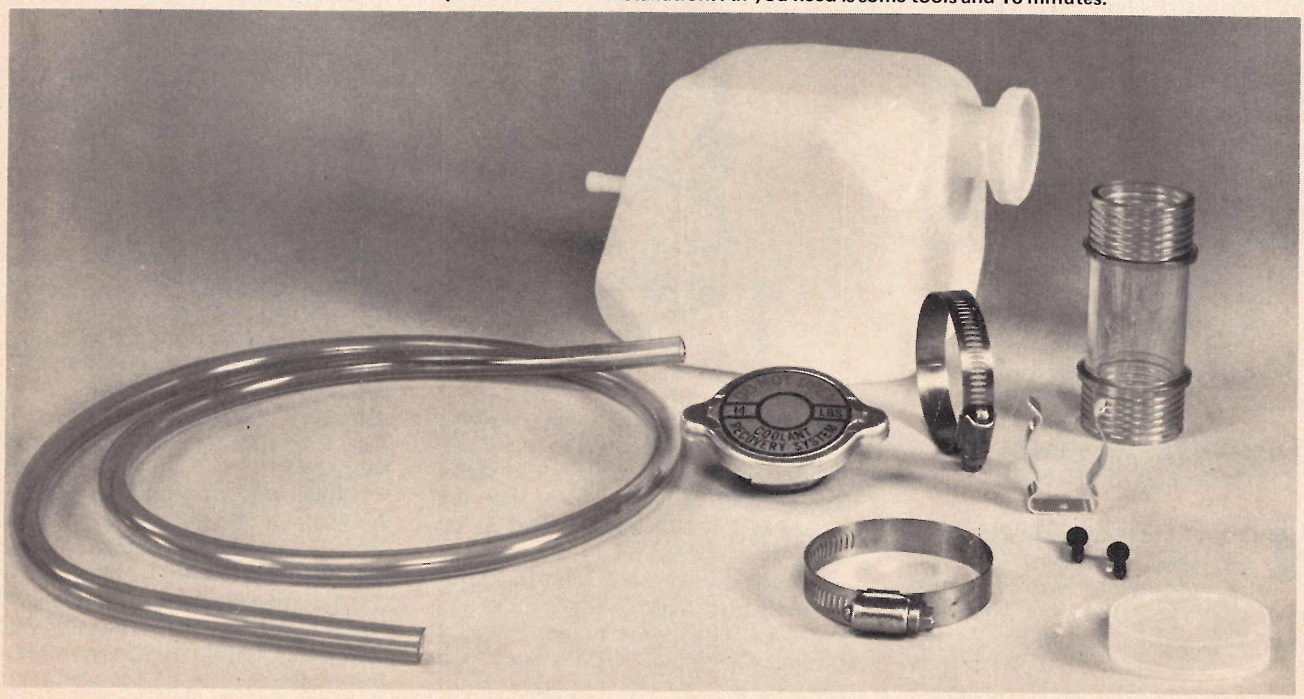
Cool, the radiator was full and reservoir had one inch of fluid. Again, the drive home. The reservoir showed two inches. In the morning, though, it held only half an inch. Two successes; the new cap forced the radiator to take back the coolant it expelled, and there was water in what looked to be a full radiator. Air bubbled out, and extra coolant went in. The radiator was full, perhaps for the first time in its life.

Operating temperature didn't change at all. It isn't supposed to. But the cooling capacity of the radiator has been increased if the need for it ever arises.

One more thing. Could you build a system like this yourself and save money? Probably. The tubing from the radiator to the reservoir is easy. Any parts store has it. The reservoir can be found. All you need is the tank from a windshield washer. Find one that will fit under the hood, and make a bracket for it. The radiator cap is harder to find. There's no parts number on it. Perhaps in time the radiator shops will have the caps. Perhaps the cap from a new Buick will work.

Human nature being what it is, you're better off buying the kit. The owner of the car used in this test has known about the system for months. And he's looked at tanks, and meant to pick up some hose, and thought about asking for the cap. But he never got around to it. The kits makes it so much easier, it's worth the extra few bucks. ■

THE SAFE-GARD KIT is complete with all the parts needed for installation. All you need is some tools and 10 minutes.



MOTOR CITY

THE CHANGE IN AIR BAG TIMING

A SMALL puzzle in Detroit is what happened to change Transportation Secretary John Volpe's mind about air bags when he visited General Motors a few weeks ago. Volpe had indicated that he was prepared to give the auto companies a couple more years of development time until he visited GM's Tech Center. Immediately after this visit, he advanced the starting date for the air bags, to January or September, 1972, for the front seat passenger.

Incidentally, the General Motors inflatable air bag is somewhat different than the Auto-Ceptor developed by Eaton, Yale & Towne, which the other makers have been working with.

GM's unit uses compressed air, rather than compressed nitrogen gas. It "springs" out from under the glove box on the passenger side and from the steering post, rather than from the glove box. And it doesn't deflate instantly, as does the Eaton system.

These changes are designed to: (a) produce a unit that's as different as possible from Eaton's, (b) prevent submarining, (c) possibly eliminate the need for a lap belt and, (d) protect the car occupants should the vehicle strike a second obstacle.

Thus far, only Eaton has introduced a system of catching car occupants in a collision. But in the near future Firestone Tire and Rubber Co. will introduce another system that will, in effect, throw a sort of trampoline momentarily in front of auto passengers about to experience a collision.

Insiders claim this will do a better job and for less money than the inflating bag, but there are a lot of skeptics in Detroit waiting for this to be proven.

CONSUMERISM IN THE PERFORMANCE MARKET

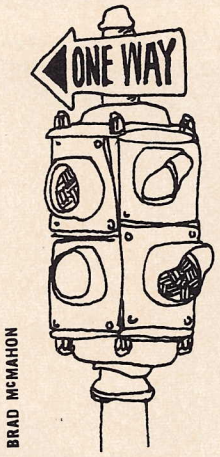
NO MATTER what you hear about the public's changing taste and the tight money market causing everybody to buy the lower-priced cars, there's still a strong demand for Supercars. But the dealers report they're having trouble. After the buyer makes his pick, the dealer runs into opposition from the finance and insurance companies.

Some dealers have an escape. General Motors, for instance, has a financing subsidiary which is supposed to be willing to put up the money for any car GM sells—provided that the buyer is a good credit risk.

For others, a sardonic solution: Let the dealer sell cars, not paper to the finance companies. And let the buyer—especially the young one who is all too willing to sign the contract before reading it—go looking for his own financing. He might learn that there are more than two insurance companies, and that the credit union where he works charges much lower rates than the finance company gets. He'll have his car, and some valuable experience in protecting himself in the credit-card society.

DRIVERS ORGANIZE . . .

THE 100 million licensed drivers in the American silent majority must stand up and speak up for their rights, according to D. Grant Mickle, President of the Highway Users Federation for Safety and Mobility.



If this huge group doesn't support sound highway transportation policies, Mickle said that an "articulate group of critics" will force policies that are detrimental to the country and to its vital system of roads.

He was speaking out strongly about the need for Congress to authorize the continued expansion of the nation's highway system and also the need for a continuation of the Highway Trust Fund before Sept., 1972.

"The taxes that go into this fund were imposed solely for highway construction." Mickle said, " and they should be continued solely for that purpose."

Because the Nixon Administration has slowed down the nation's road building program, this fund now exceeds $2 billion and a good many bureaucratic agencies are looking longingly at it.

In many respects the auto companies represent the interests of the 100 million U.S. licensed drivers, but these companies are being forced into compromises increasingly by pressure from the critics and the government. As a consequence, they're less and less able to represent the position of the average motorist.

MID-ENGINE MANIA

THE DOMESTIC automakers—Ford, Chevrolet and American Motors—have broken out a selection of mid-engine cars. They're different and they can provide superb handling. But top Detroit people see only a very limited market for the "middies" for the simple reason that they're strictly 2-passenger cars and they'll stay that way.

Another negative is that a lot of drivers—even enthusiasts—are a little disturbed by having a 300-bhp or larger engine in the back seat.

DRUMS VS. DISCS

FOR SOME time the American auto makers have said that drum brakes and disc brakes were a toss-up in terms of stopping distances, while admitting that the European developed discs had several other advantages, including much better fade-resistance and better performance while wet.

Now, the Consumer Information booklets in all new cars clearly reveals that, in almost identical situations, the cars with disc brakes will stop in about 5% less distance on the average than drum brake cars will. This amounts to around 10 feet at 60 miles an hour. On some cars, the disc brakes have a superiority of 14%.

Born and bred on the back roads of Pennsylvania

A set of wheels lasts a lot longer around Bradford, Pennsylvania.

Why? Because Bradford's the home of Kendall GT-1 Oil. Made from the richest Pennsylvania crude. So rich and smooth it maintains proper lubrication at the highest RPM's without thinning. And in high performance engines that means less friction on the valve train, bearings, crankshaft —all moving parts. Less friction means less scuffing, less scuffing means less wear.

And less wear means longer engine life.

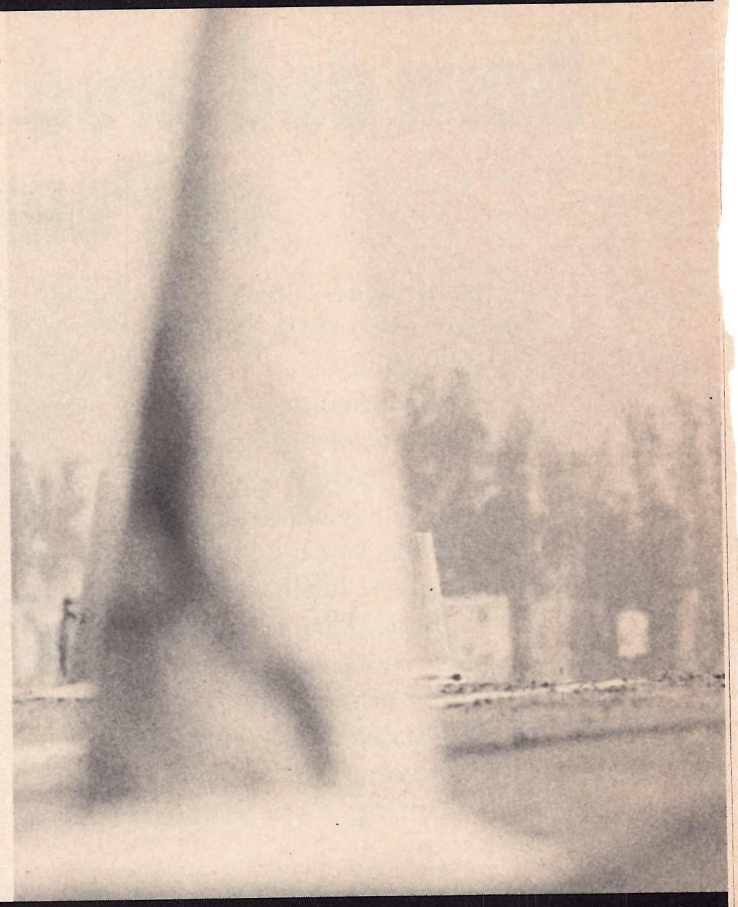
So if you have a high performance mill and you need the kind of performance only GT-1 can give, ask for it.

It's the high performance leader of a superior line of 100% pure Pennsylvania motor oils.

Kendall Refining Company
Division of Witco Chemical Corp.
Bradford, Penna. 16701.
Also available in Canada.

DRIVING THE LATE SHOW

The AAR 340 'Cuda arrived too late for the Showroom Trans-Am Contest. Too bad; the car can hold its own against the others in its class.



THE OTHER entrants are out of sight, around the first turn in a cloud of dust and tire smoke. Out of the pits comes the AAR Barracuda, Plymouth's offering for the showroom Trans-Am market. Can the triple-carb 340, the revised suspension, the biggest tires in the field, make up for lost time?

No, because the rules clearly disqualify late entries in CAR LIFE's Showroom Trans-Am Championship. But if they didn't, or if the Barracuda had been ready when the flag fell, things might have been different.

Back to the past for a minute. Last month, we invited all the factories whose cars will be competing in the Trans-Am to take part in a group test, a comparison of the production cars as racers. We got a Z/28 Camaro, a Boss 302 Mustang, a Trans-Am Firebird 400 and a 360 Javelin. We pitted them against each other in a drag race, a braking contest, and on the skid pad. Then we built a slalom course and ran them against the clock. The Z/28 won the most points and the contest was over.

The Plymouth entry then arrived. It's named the AAR Barracuda because Dan Gurney is building and driving the Plymouth Trans-Am team and his firm is All-American Racers. The AAR is quite a car. It has some good stock pieces, like the 340-cid V-8 that's the basis for the racing engines. The race-listed production 340 has a beefier block, to take racing stress, and revised cylinder heads, to allow port reshaping. And there's an Edelbrock manifold with three two-barrel Holley carburetors, good for the street and a rated bhp of 290 although the SCCA only allows one four-barrel.

On the outside, there is a cold-air scoop, which works on road or track (unpaid advt.) and a rear spoiler that works at racing speeds. The front tires are E60x15, and the rears are G60s. Yes, bigger tires in back. Raked when it comes from the showroom, and the extra rubber in back helps traction on starts and on corners.

There is one dumb item, some side-exit exhaust pipes. Very fake. The exhaust pipes run all the way back to a big muffler under the trunk. The muffler turns everything around, and the exhaust comes back toward the front of the car, then kicks sideways into chrome cans just ahead of the rear wheels. The actual pipe is hidden inside the can. The whole thing is heavier and less efficient than the old way.

For shame.

But more than compensating for that is the rear anti-roll bar we were promised months ago. It's perfectly straightforward, being a bar mounted to brackets bolted on the frame rail above the rear axle. A link goes from each end of the bar to another bracket at the spring perch. Looks like seven parts, some bolts, a drill and wrenches and any 1970 Barracuda, maybe even the older ones and Valiants and Dusters, too, can have one.

It took some time, but Plymouth went a long way toward putting the Barracuda fan into a street version of the racer he roots for. It's too bad that we can't count any of the following results in our championship. Remind yourself that the times and findings aren't official.

This particular car had been prepared for tests other than ours. While we asked for final drive ratios of 3.9 or 4.1:1 on our Trans-Am candidates, the factory delivered our AAR with the 3.55:1 gearset standard for the 340 Barracuda. And the car had a Super-Stock clutch. We are told that the PR

PHOTOS BY PAUL FREILER

people fear to have the reckless press thrash stick 340s without it. It works, at the strip, but it grabs and snaps at low rpm. You can't get one with the showroom AAR, and you are lucky.

Otherwise, the AAR fitted the pattern, with a four-speed manual transmission, · power-assisted steering and disc front brakes. The 340 engine and the test weight of 3575 lb. put the AAR right in the middle of the group.

Until the light went green. The tough clutch and big rear tires let the hammer drop like Thor's. And the shifter was a light one, perhaps the lightest we've tried on a Mopar. Off the line at 4000 rpm and a trace of wheelspin and through the gears like Grant through Richmond, to an E.T. of 14.50 sec., at 98.68 mph. A dead heat with the lighter, inchier Z/28, and faster than the others.

It doesn't count, of course. But the AAR is quicker than the average 340 'Cuda. Our test 340 with automatic and 3.55 went 15 flat. The triple carbs work.

But don't complain about our rules, Mopar fans, not yet. On the first stop from 80, the AAR went 326 feet, third out of five. And the brakes went rapidly downhill from there. The rear brakes faded so far the warning light—meaning no pressure—came on. The eighth stop was a coast of 737 feet, the longest recorded since we began measuring stopping distance. Yes, the racing cars can use aftermarket brakes, and rear discs. Why do you ask?

Happier days at the skid pad. Wrong though this sounds, increasing roll resistance at the rear of a car, which is just what a rear anti-roll bar does, increases the grip of the front wheels, just what the Barracuda needs. Increasing the size of the rear tires increases the grip of the rear wheels. Presto, the AAR gains all the way around.

The skid pad is more a test of driveability at the edge of traction loss than it is a measure of lateral traction. Any car worthy of the name will go around the circle faster with front, rear or both sets of tires sliding than it will with no slide at all.

The Barracuda tested earlier this year had cornering power, but its front weight bias and lack of a rear anti-roll bar caused it to plow, first, last and always. With the front overcome, the back never gets a change to use what cornering power it has. The AAR suspension balances, as well as improves, the handling.

There was initial understeer, but less of it. The front could be kept straddling the circle while the rear wheels drove the car faster and faster.

Characteristics were parallel to the Camaro and Firebird, which both also had understeer at the relatively low speeds obtainable on the skid pad. The Boss Mustang was nearly neutral, and had the best readings. The Javelin oversteered, the tail of the car coming out before the front slid off the line.

In figures, the AAR recorded a lateral "G" reading of 0.75 to the right, and 0.64 to the left, for an average of 0.695. Not quite as good as the Mustang's 0.73 or Camaro's 0.72, but better than the Firebird's 0.69, to put the Barracuda back into contention.

The main event in the group test was a slalom course, a snakey 0.8 mile challenge laid out on and through Digitek's brake test area, around the skid pad, out onto the road course through a nasty switchback and back through a chicane. The idea was to compare acceleration, braking and handling, at speeds from 10 to 80 mph, in one test. ▶

AAR insignia heralds All-American Racers, Dan Gurney's racing organization, which runs 'Cudas in the Trans-Am.

Building a custom track is fine. Building a duplicate three weeks later is risky. It looked the same, or at least the second course looked as we remembered the first course. But even a minor change, one corner tighter than it was, the straight parts a few feet longer, can alter the timing by the fraction of a second that makes all the difference.

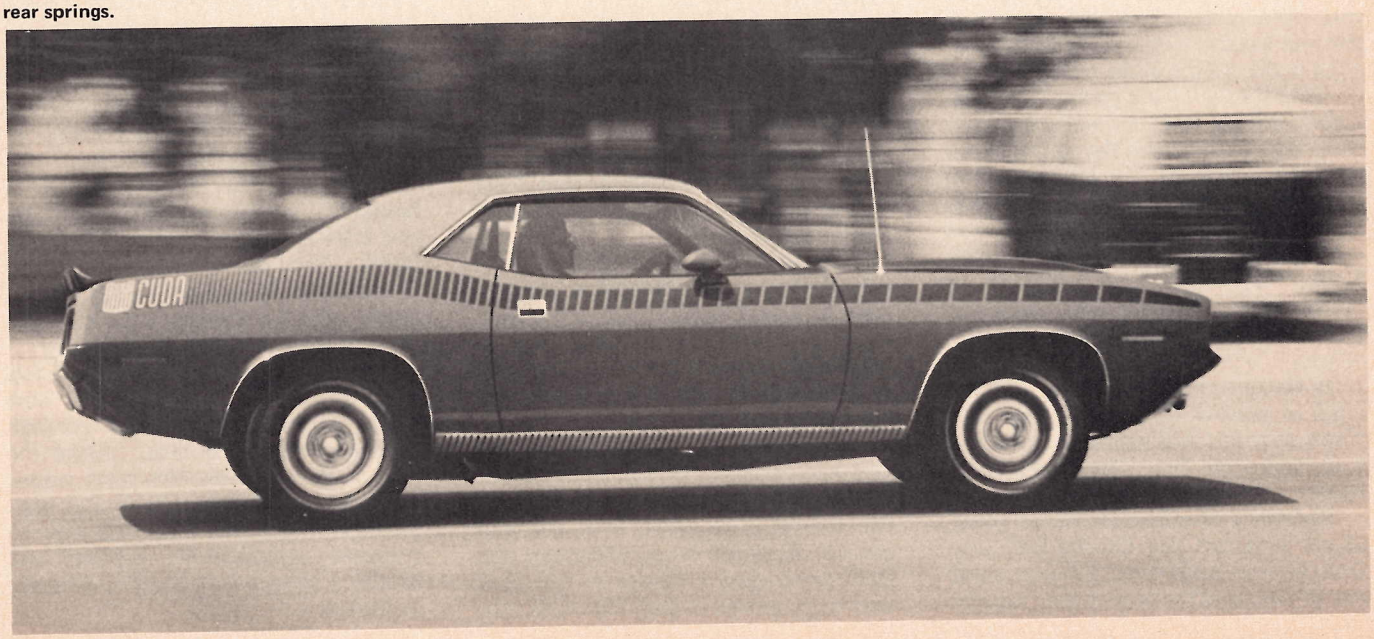
On times, the Barracuda had a best of 0:59.4, or exactly one-tenth of a second quicker than the Firebird, which won the group slalom.

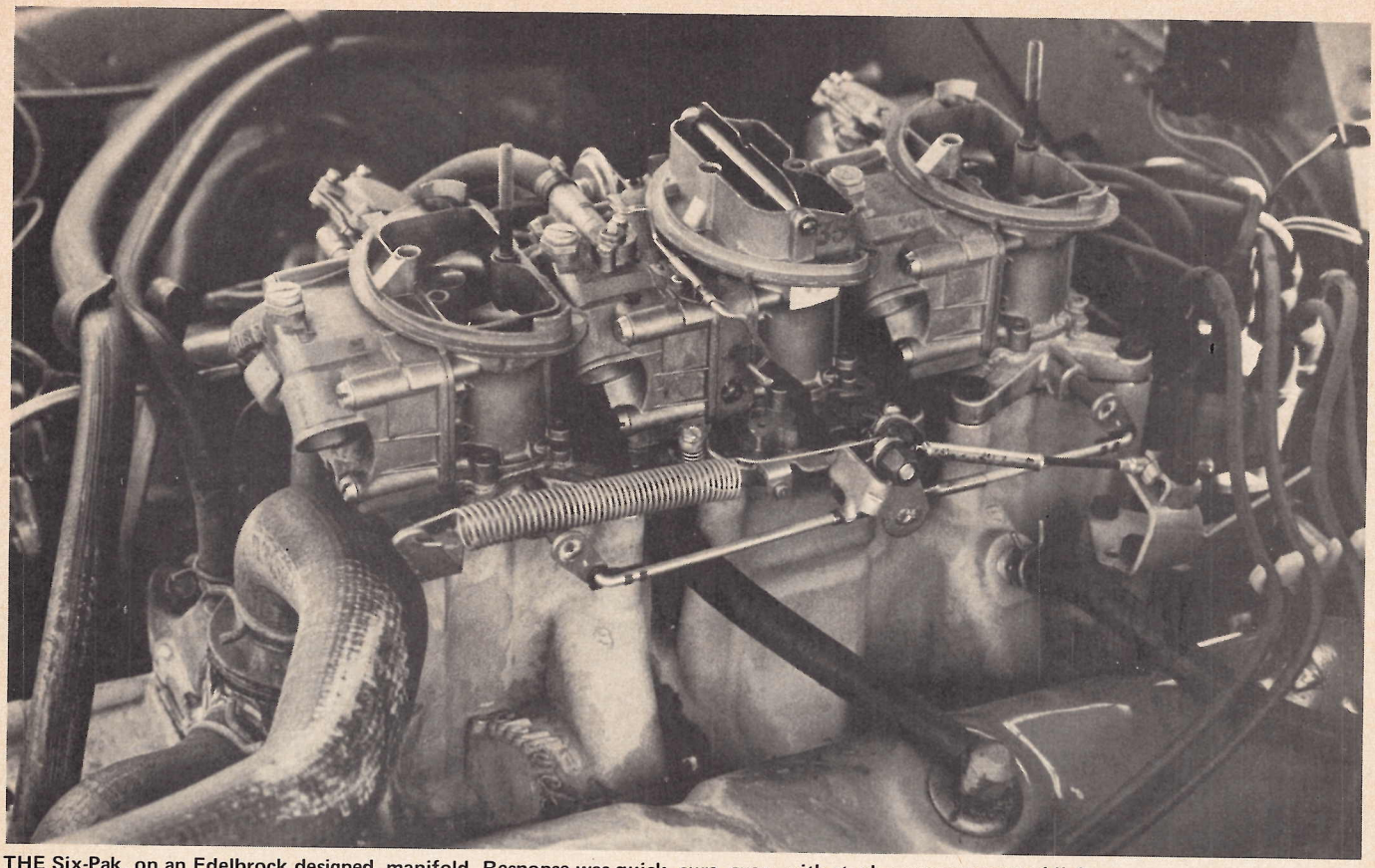
Mind, we are not telling you the AAR was the quickest. We cannot.

But it surely did feel quick. The Javelin worked on the tight bits, but couldn't use its power elsewhere. The Mustang ruled the skid pad, but couldn't use all its power coming out of the corners. The Camaro could, but had crippling axle hop on braking. The Firebird didn't, and won.

The Barracuda was neat through the chicane and tidy around the skid pad. Full power the rest of the time. As speeds went up, the plow went away. The big tires belted the car out of the corners, and braking power was there while the short distances involved

NATURAL rake of AAR due to bigger tires in back, stiffer rear springs.





THE Six-Pak, on an Edelbrock designed manifold. Response was quick, sure, even with stock vacuum-operated linkage.

didn't give the brakes a change to fade away.

In day-to-day terms, the AAR is a 1970 Barracuda, which does not win it our unqualified approval. The seats and seating position were the worst of the five. The ride is acceptably firm. Noise level was lower than it was in the Mustang or Javelin, higher than in the Camaro or Firebird.

The philosophical point concealed in the group comparison was that the Trans-Am racers are not showroom Ponycars with the mufflers taken off. They are racing cars professionally constructed around a loose interpretation of what a production car can become if somebody wants to win road races with it.

Whether the AAR Barracuda is or is not the starting point for the winner of the Trans-Am series, it is the equal of its showroom competitors. And it is the Barracuda to buy if you want a road car capable of doing what an enthusiast wants to do with the open road.

Before, if you liked a Ponycar, you had to wait for better perofrmance. With the AAR, Chrysler did the job in only six months, and did it well. ■

AROUND circle to test steady-state cornering ability, AAR was fine, generating a high "G" factor.

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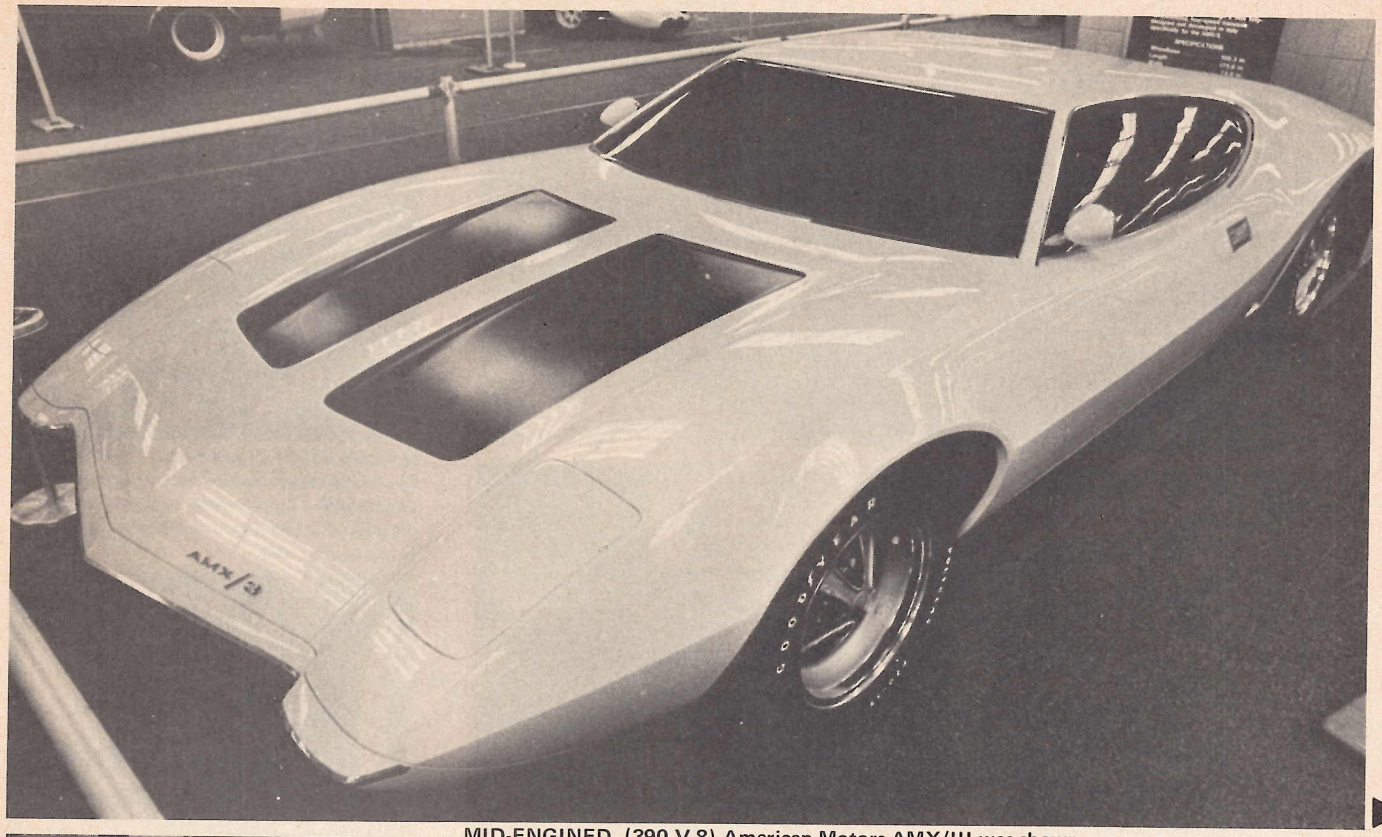
CUNNINGHAM coupe of 1952 shares the coliseum lobby with Cunningham roadster, 1928 Stutz boattailed speedster and 1912 Kissel Kar.

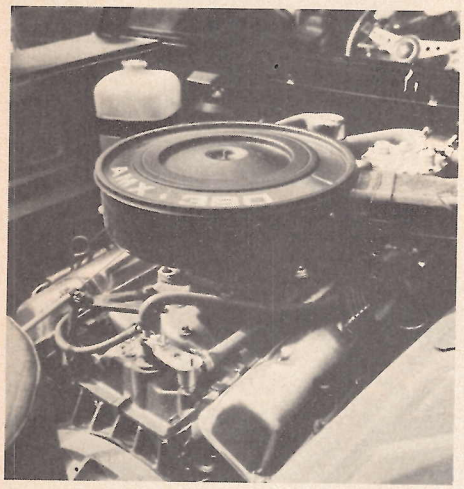
THE NEW YORK SHOW...

had everything; mid-engined GT cars, customized Ponycars, dream cars, racing cars, experimental cars, everything. Maybe some of it will be seen someday in real life.

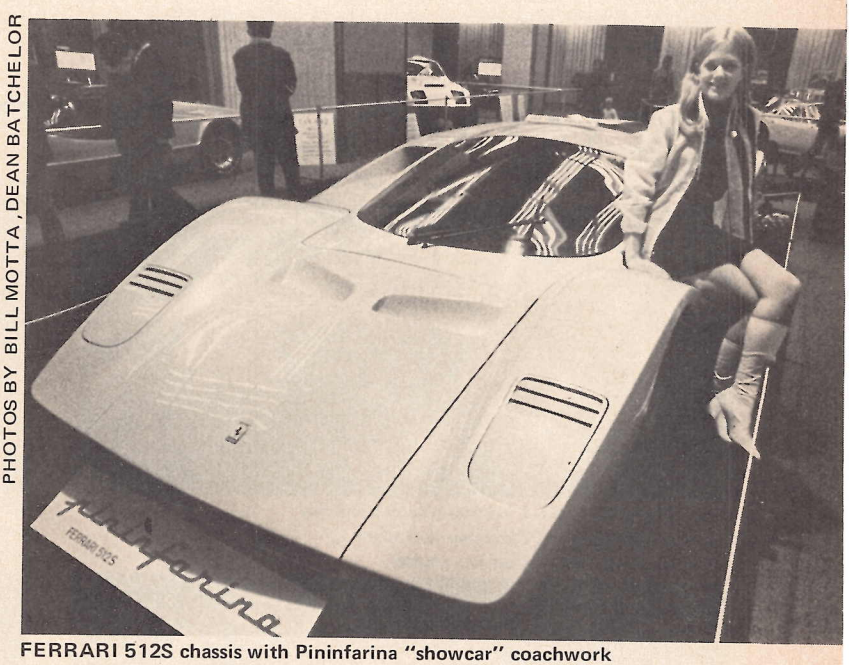
JEEP XJ-001 is standard 4-wheel-drive Jeep underneath but shows evidence of the awakening interest in jazzier on/off-road machinery from a formerly staid company. Is there hope for the Wagoneer?



MID-ENGINED, (390-V-8) American Motors AMX/III was shown to public for first time. The car was designed by AMC with help of BMW in Germany and Bizzarrini (who will handle ultimate production) in Italy.

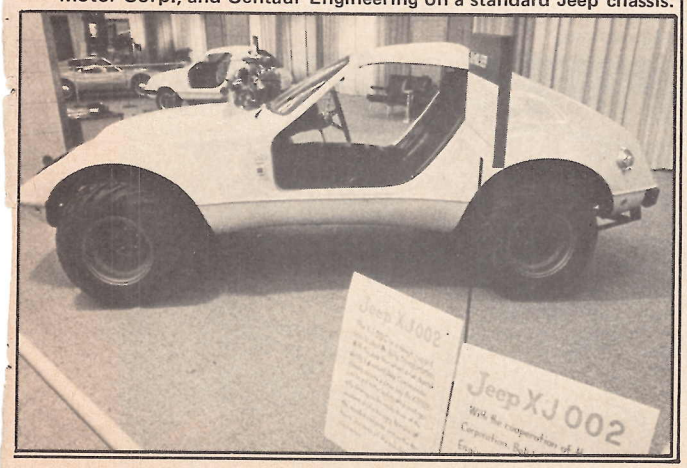


PHOTOS BY BILL MOTTA, DEAN BATCHELOR

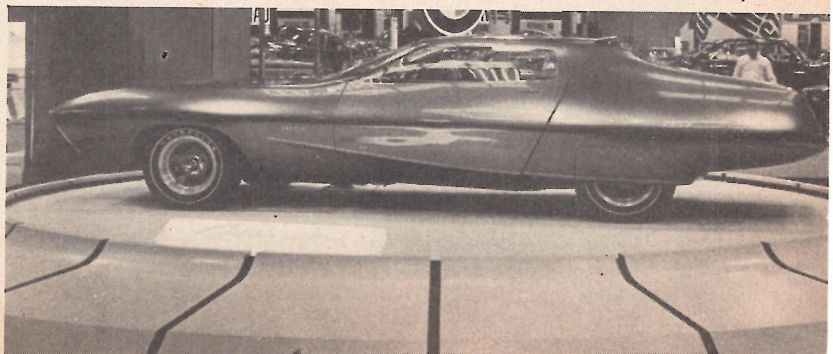


FERRARI 512S chassis with Pininfarina "showcar" coachwork

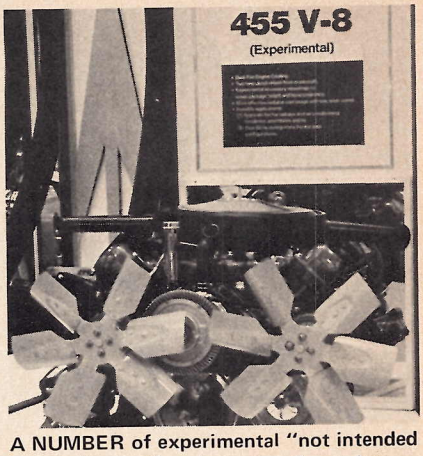
JEEP XJ-002 is a privately financed development by Bolide Motor Corp., and Centaur Engineering on a standard Jeep chassis.



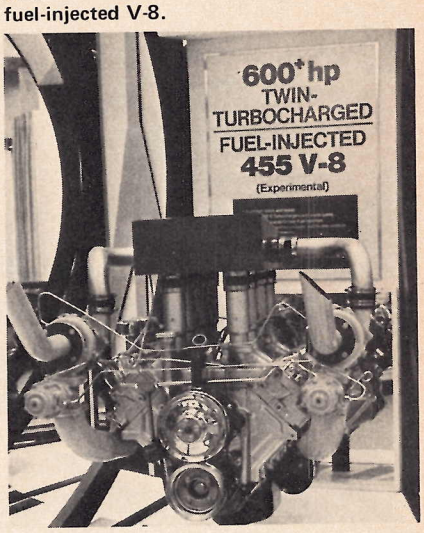
TURNING on a revolving platform was Chryler's showpiece, the "Cordoba de Oro," featuring one of the largest doors in automotive history.



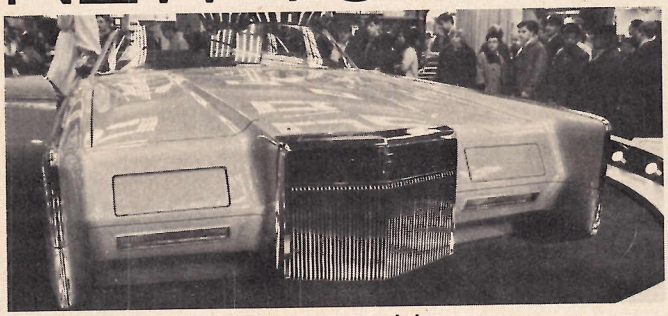
FORD'S "Milano" is another in a long line of Italian-named cars for the company—following Cortina, Capri and Torino.



A NUMBER of experimental "not intended for production" engines were shown by Oldsmobile. Two were a very low profile Rocket V-8 and a twin turbocharged, fuel-injected V-8.



NEW YORK SHOW continued



CONTINENTAL Mark III Phaeton graced the Lincoln/Mercury exhibit as an attention getter-but-not-for-production model.

CROWD teaser from Chevrolet was the handsome "Glen Campbell" Camaro. No production plans are imminent for this or any Camaro convertible.

Introducing:

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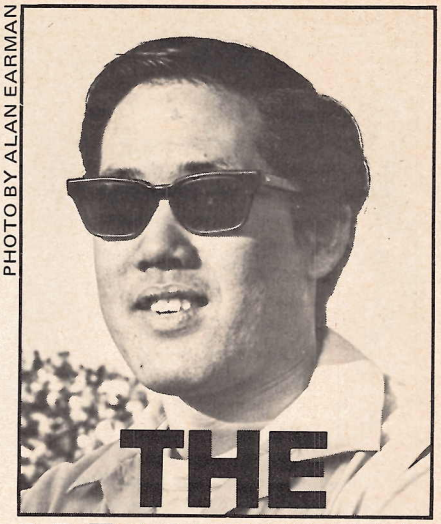


PHOTO BY ALAN EARMAN

THE HAWAIIAN

The winningest car owner in fuel drag racing was accused of being a rich kid. Then Roland Leong changed everyone's mind.

BY JOE SCALZO

ROLAND LEONG, one of drag racing's winningest owners, remembers the crash vividly: His funny car, *The Hawaiian* was nearing 180 mph when the front wheels lifted off the ground. The lifting precipitated a hideous series of flips which tore off the body and yanked out the back axle; Roland, standing nearly a quarter-mile away, could hear the gouging and tearing as *The Hawaiian* bludgeoned itself to pieces along the pavement.

In a crash this serious the first thing you worry about is the driver. But aside from a slashed nose and a severe shaking, driver Larry Reyes was perfectly okay; a seasoned professional, he had crashed dragsters before. Nevertheless Reyes was taken to the hospital for a check-up and Roland accompanied him. The crushed *Hawaiian* was, for the moment, forgotten.

But as soon as Roland had determined that Reyes was physically unbent, his thoughts reverted back to the car. How badly was it wrecked? How long would it take to rebuild it? When could it be raced again? Would Reyes still be available or should he find a new driver?

In the ambulance Reyes informed Roland he still wanted to drive. With this problem solved, Roland could now concentrate on rebuilding the car. Unlike some dragster owners who employ expensive crews to do the work, Leong gets involved and does almost all the work on *The Hawaiian* himself, including towing it to the races. In a few months he had his $15,000 namesake restored to all its potent, destructive beauty. Then Reyes, as if to prove that the crash had not unnerved him, climbed back behind the wheel and proceeded to win a fantastic 80% of his races for the balance of the 1969 season.

The crash took place at the Pomona strip during the '69 Winternationals. Last February, at the same track and the same event, Leong fired up the 1500-bhp *Hawaiian* again, Reyes stomped on the throttle very hard—and easily won the Funny Car title.

Dragsters owned by Leong have now won the Nationals at Indianapolis twice, the Winternationals three times, Bakersfield and Las Vegas. Reyes is Roland's full-time driver now, but in the years 1965-68 his drivers included Don Prudhomme, Mike Snively, and the late Mike Sirokin. Though *The Hawaiian* may well be the hottest funny car on the scene, Roland never drives it himself, says that he has no desire to. "These cars are not toys to me. They are expensive. Do you know that it costs $20 worth of nitro just to make one run?"

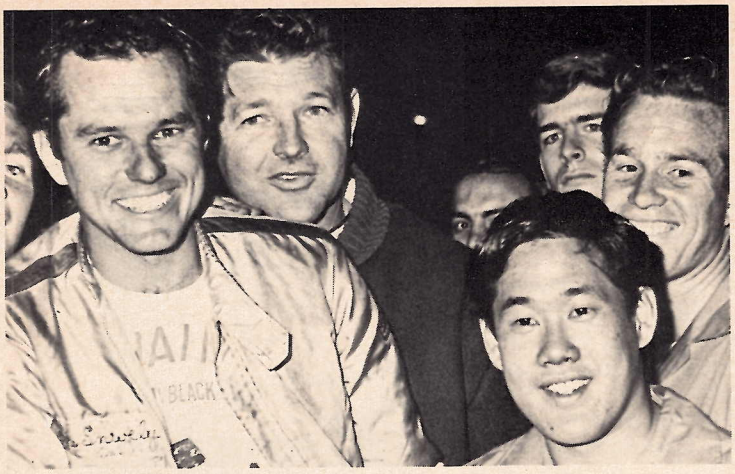
To an outsider this may be hard to comprehend. Roland Leong owns the 1500-horsepower *Hawaiian*, one of the most desirable racing machines in the world. But he won't drive it, not even for kicks. He is very serious about drag racing, he loves the sport above all things, and is a professional (last year he made about $65,000 from racing).

Yet when he first arrived in California from Honolulu six years ago, he was not professional at all, and in fact was thought to be nothing more than a rich kid. He drove, as well as owned, his cars in those days, and on the dragstrips of Hawaii was virtually unbeatable. This was not necessarily because of skill. Roland simply had the fastest cars, and he raced against spotty ▶

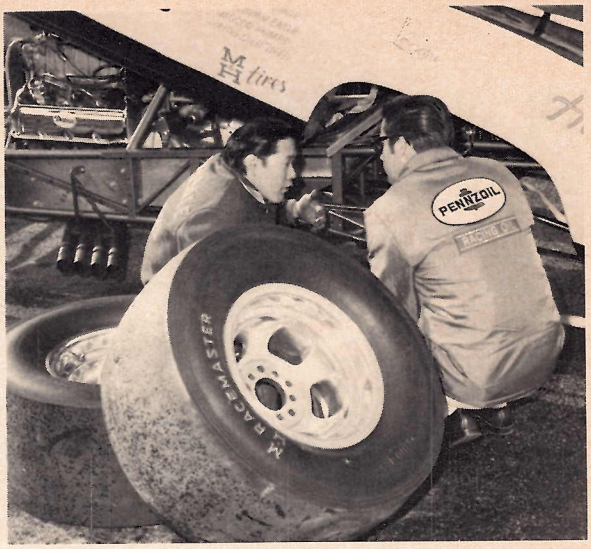
TERRIFYING LEAP made by The Hawaiian at 1969 Winternationals. Driver Larry Reyes was uninjured.

PHOTO BY LESLIE LOVETT

PHOTO BY ALAN EARMAN

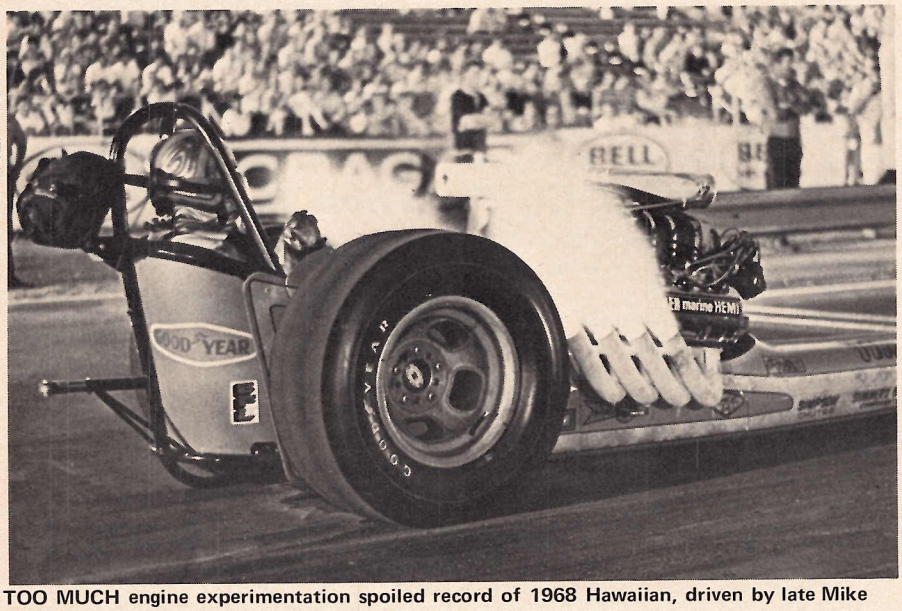


MASTER ENGINE builder Keith Black (center) hovers paternally in the background as driver Mike Snively and Leong celebrate another victory.



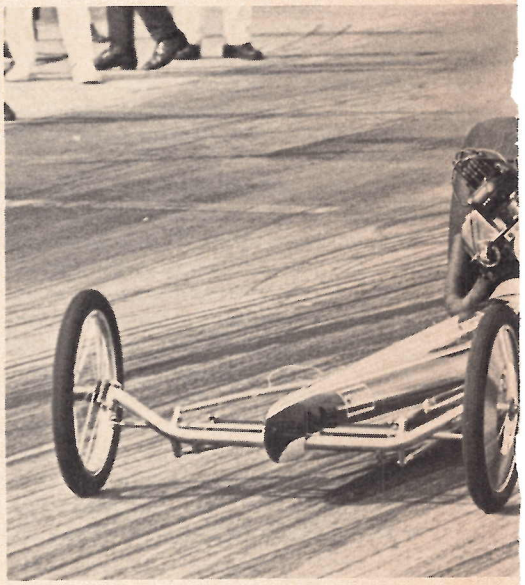
LEONG ponders a tire change with a mechanic.

PHOTO BY ALAN EARMAN



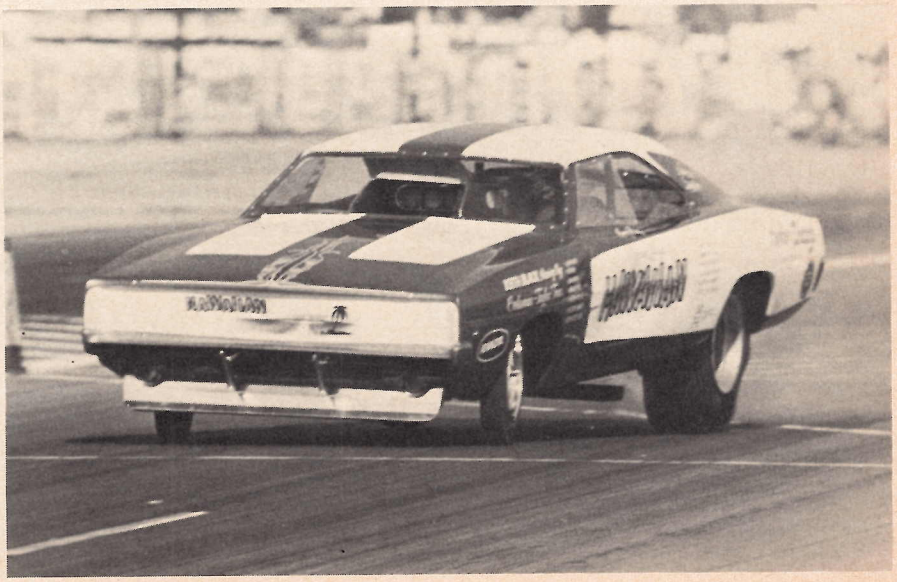
TOO MUCH engine experimentation spoiled record of 1968 Hawaiian, driven by late Mike Sorokin.

PHOTO BY ALAN EARMAN



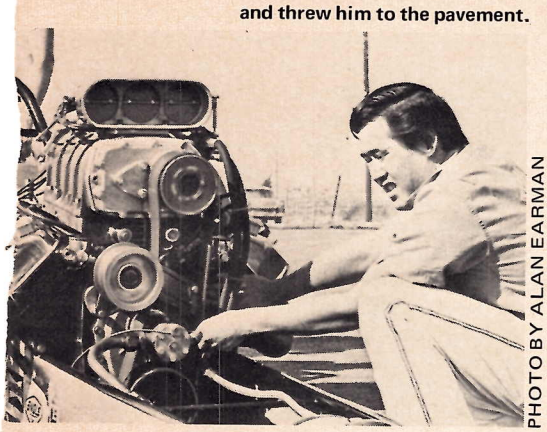
MIKE SNIVELY in the functional looking Hawaiian No. 1. A relatively unsuccessful car.

The Hawaiian at 1969 Winternationals



Driver Larry Reyes, in winning the Pomona race, proves Roland made the correct choice.

FIERCE 1500-bhp Chrysler engine, built with Roland's own hands, once backfired and threw him to the pavement.



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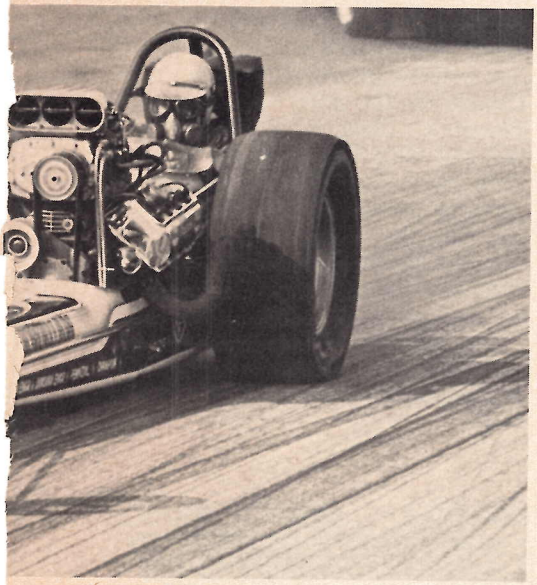


HAWAIIAN

continued

competition; there were few really hot cars on the islands. At first he borrowed his mother's Buick, but it didn't have the horsepower to suit him. Gradually he advanced up the line, his parents bankrolling him. He raced a Corvette, then built a big gas-powered dragster, with a 480-cid engine, which hit 170 mph.

He was 19 when he arrived in California. The fuel dragster winning all the major races at the time was owned by Keith Black, an almost legendary engine builder who had Don Prudhomme driving for him.

Roland walked into Black's shop one day and said build me a duplicate. Black said it would be expensive, Roland said fine. His mother mailed a check from Hawaii.

The finished car was a thing of beauty. Roland named it *The Hawaiian* and promptly towed it to the Lions dragstrip in Long Beach. He mashed the throttle, went into a long careening slide but refused to lift his foot until he reached the end of the strip. By then he was doing better than 200 and was so intoxicated by the speed he momentarily forgot where the puller handle for the parachute was located.

Short of crashing, there is no way to stop a fuel dragster other than with a parachute. Roland bored down the track, unslowing. At the last instant he found the handle, yanked it, and the parachute blossomed out behind, instantly knocking 50 mph off his speed.

It was too late; he had run out of track. He hit a railroad abutment at the end of the strip. The car bounced high in the air and came down heavily atop the railroad tracks, completely wrecked. Roland, unhurt, later said he "did a lot of praying" while airborne.

Two things happened next. The NHRA revoked his competition license. And Keith Black, who had watched the hair-raising ride in terror, said that he would help Roland maintain the car if Roland agreed to hire a driver.

So Roland became a car owner. He practically lived in Black's South Gate headquarters and soon was getting greasy and dirty from working on the car.

He was the new boy on the racing tour and the wise veterans wondered how long he would last. They had seen rich playboys before; they soon lost interest in the racing and moved on to some new diversion. But Roland wasn't buying fun. He bought equipment. And he worked on it. Recalling those days, Keith Black remembers that Roland was an introvert; he was young, still growing up, and was easily pushed around and taken advantage of.

From the start Leong wanted to win. In 1965 he hired Prudhomme to drive *The Hawaiian*. Prudhomme proceeded to win the Winternationals and the Nationals that year, and Leong overnight became the sport's most successful and best-known car owner.

There was even greater glory the following year, 1966, when Mike Snively took over the driving and *The Hawaiian* again won the Winternationals and the Nationals.

It would have been unprecedented if the car had repeated these wins in 1967. As it turned out, it did not; but the late Mike Sirokin, piloting a second Leong-owned dragster, did win a big Las Vegas meet that year.

In 1968, Roland and Keith Black were experimenting with new engines. Usually these experiments literally went up in smoke. Snively, driving for Leong again, did not win a single big meet all year.

Last season, of course, Leong sold his fuel dragsters and entered the Funny Car Division. His clear-cut win at this year's Winternationals proves he still likes to win as much as ever.

Not once since he became an owner has Leong driven one of his cars. Also, he has managed to shed his rich kid image, which never was true anyway, according to Black. "That was a myth," Black says impatiently. "What it boils down to was that Roland's parents gave him the choice of going to college or doing something else. Roland chose drag racing. The money his parents would have used to send him to college went into his racing. But for the last couple of years he hasn't had any help from his parents. The things he has accomplished, he has accomplished on his own."

Stories about the fantastic wealth of Roland's parents also are untrue, says Black: "Roland's parents run an insurance company in Honolulu which they have worked all their lives to build."

Leong is 25. He has a coppery complexion and is in fact a Hawaiian. He has fashionably long hair, always wears sun glasses, and is quiet.

Married, he has two young children, and lives in Los Angeles. His family does not see him much. He usually arrives at Keith Black's shop around noon, just in time to lunch with Black and his mechanics. After lunch he drifts through the shop, pausing occasionally to chat with some of Black's other drag racing customers; Black, perhaps the most prolific dragster engine builder of all, has about 50 clients besides Roland. Late in the afternoon, when everyone is getting ready to go home, Roland quietly changes into his work clothes and begins putting his racer together or taking it to pieces. Once started, nothing interrupts him, and he usually toils on until one or two in the morning.

His schedule on the road during summer is no less fatiguing. He tours like crazy to the different strips and in 1970 will take *The Hawaiians* and Reyes to about 80 races in a dozen states. Each winter Roland starts booking appearance dates with the various strips. The more dates he makes, the more races he can cram into his schedule, the more appearance money he will pocket.

Instead of hiring someone to tow the car to the races, Roland tows it himself. He employs a helper, someone he can pay $75 a week, to do the odd jobs. Reyes, the driver, works on a percentage; he keeps 30% of any prize money he wins. Money in drag racing is not that good. Reyes will race *The Hawaiian* 80 or more times this season but make only $15,000 or so. He shares food and motel bills with Roland while on the road.

HAWAIIAN

continued

Roland's career nearly ended on the road in 1966 while towing *The Hawaiian* to a race. He and Mike Snively were shaken up when another driver inadvertantly cut them off while attempting to pass. They ran off the highway into a ditch and both the tow car and trailer flipped over. Snively, who was driving at the time, leaped out uninjured. But Roland, who had been sleeping in the back, did not move—he had slept through the entire accident. He explained later that he had gone without sleep for three nights while putting the engine together and was very tired.

He does practically all the work on *The Hawaiian* himself, including the building of the supercharged 1500-bhp Chrysler engine. He builds his engines tough, so that Reyes can wind them as high as 9000 rpm if he chooses, which he often does. Reyes goes hard.

Roland loves drag racing, but does not always find it pleasant to watch Reyes blasting down the strip, tires smoking, almost out of control at 200 mph. No driver has ever been killed, or seriously injured, in one of Roland's cars, but Roland is sometimes uneasy about sending a driver out in so violent a contraption as a Funny Car. John Mulligan, burned at Indianapolis last year, was a close friend; the day after the accident Roland had visited Mulligan in the hospital, and had laughed and joked with him. Leaving the hospital, Roland was convinced that Mulligan soon would recover. Three weeks later Mulligan's condition worsened suddenly and he died. "When someone as good as Mulligan gets killed," says Roland, "it shakes you up. It really shakes you up."

Of course the car is valuable. An engine costs $5600. The complete car is closer to $15,000. The car is, however, insured. It can be replaced. On the other hand, so can the driver. The harsh rule of racing is that if your driver is not stomping on the gas hard enough, you fire him. So Reyes had damn well better drive *The Hawaiian* as fast as it will go or he will be out of a job. This is not really a problem, because Reyes drives the car as fast as it will go. He and Roland are both in racing to win.

Roland feels lots of tension when *The Hawaiian* is in a race. "By the end of the day," he says, "I'm pretty tense. I want to win; I don't like to lose." Since he made so much money from drag racing last year it is clear that most of the time Roland does win. But the dough obviously is hard-earned.

Drag racing, a sport that once belonged to the kids, is no longer a kid's sport; not in the blazing Funny Car division at least. There it is big and professional. And professional is what Roland Leong is. He not only has a knack for building fast cars, but for signing the fastest drivers.

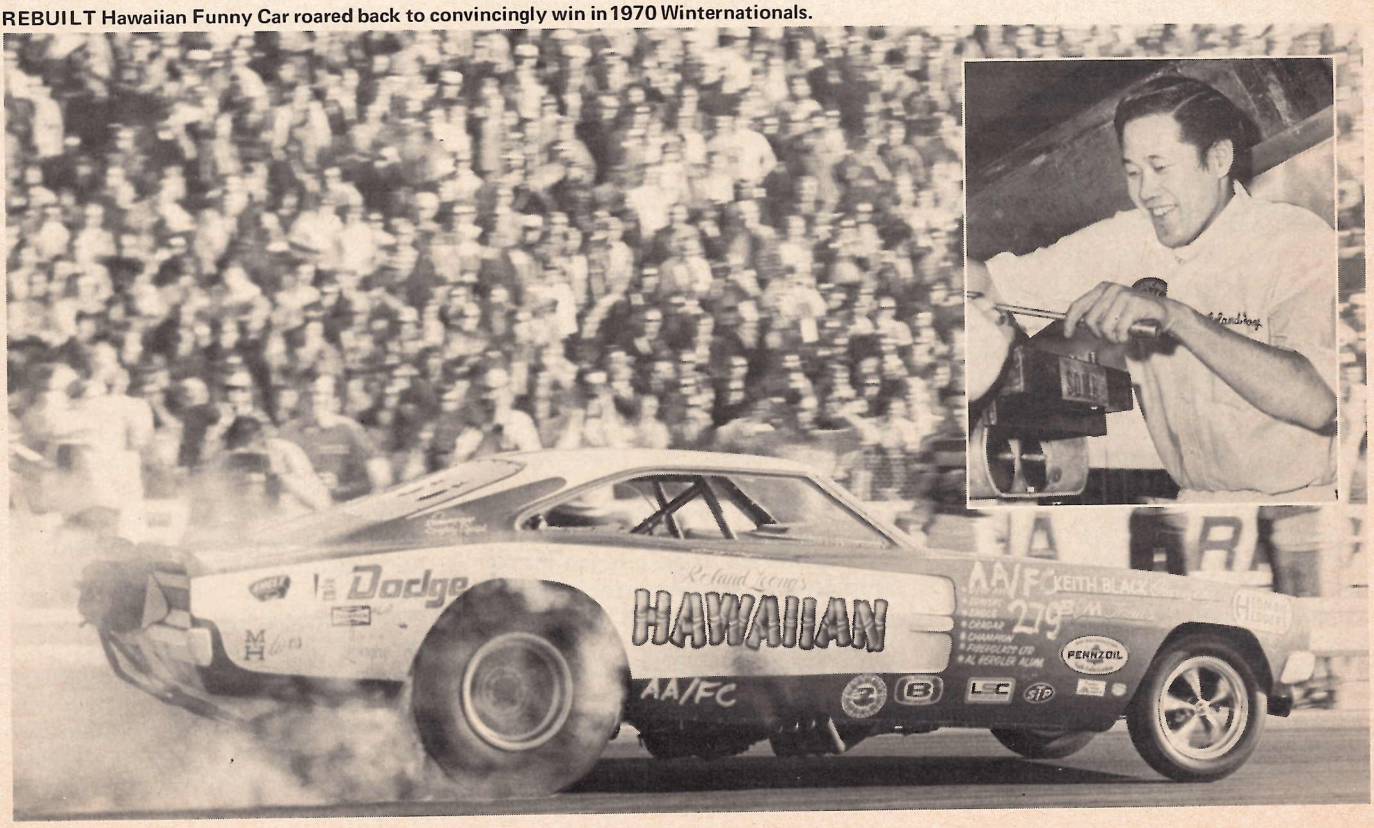
The satisfaction he gets out of owning and working on—but not driving—his car is, Keith Black says, not difficult to understand. "Personally", says Black, "I get more satisfaction out of making the cars run than I ever could from driving them. I think Roland feels the same way now. It's a different kind of satisfaction."

Once Roland was tuning up an engine and it backfired flame through the supercharger; the force threw him on his back and burned all the hair off one of his arms. The satisfaction of building something so lethally potent with one's own hands must be highly pleasing. Roland also enjoys the skull-shattering noise as well. His car has clocked 207. He hopes for 215 by the end of this year.

Never mind how hard he had to work to coax that much performance out of his car, Roland is used to working hard. At the AHRA Nationals at Phoenix the week before the Winternationals, Reyes seemed a sure winner until he jumped the starting lights and was disqualified. Leaving Phoenix immediately afterwards, Roland towed all night back to Los Angeles, arriving in town at 3 a.m. Exhausted, he slept until the next afternoon. Then he overhauled and tinkered with *The Hawaiian* for two nights and three days without sleep, surviving on cigarettes and jugs of iced tea. This wasn't so difficult, he said, when he was touring he often got less sleep than this, and once lost 20 pounds in a single week.

He buttoned up *The Hawaiian* in time for Reyes to drive it in the Winternationals, and, of course, Reyes won. ■

REBUILT Hawaiian Funny Car roared back to convincingly win in 1970 Winternationals.



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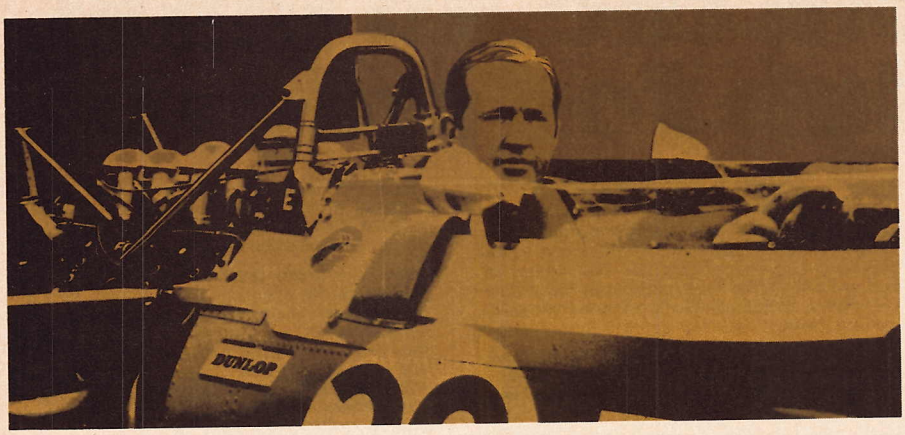


OVER THERE

BY EOIN S. YOUNG, EUROPEAN EDITOR

ONE STEP forward all those he-men who would like to see the Austin-Healey 3000 revived! OK, fellers, at ease, it's happening. Donald Healey, 72, dapper and very much on the ball, has been called in as the head of a revamped Jensen operation and high on the list of design priorities is a high volume medium-price sports car—just like the Austin-Healeys of revered (to some) memory. Healey was squeezed out of the market when the Leyland juggernaut rolled in the gates at BMC, and I have an idea there was something attached to his golden handshake that said he wasn't going to set himself up in business with another sports car for at least three years.

That time must be up now, and the spritely Donald (I had to get that pun in somewhere) heads the Jensen Board. I went up to the pleasant little factory in Warwickshire just about the time it got the chop from British Leyland and there was talk then of building a low-volume, road-going version of the still-trying mid-engined Le Mans car but using the civilized aluminum Rover V-8 in place of the racy 2-liter Coventry Climax V-8. Also there was a pair of cars sitting in the yard that would make your mouth water if you happen to be a Healey nut. "Look at them and tell me what you think of the difference," said Donald, but not being a very bright sort of chap in spot-the-difference contests I couldn't really see one. Then he showed me that they'd taken a Healey 3000, sliced it down the middle from the front to the back and slotted in an extra six inches in width which made for all sorts of room in the cockpit and apparently aided the road holding. The old Austin engine had been replaced by the 4-liter Rolls-Royce aluminum engine and one of the cars had an automatic transmission. This was Healey's offering as a replacement to the Healey, but it was turned down, and now the prototypes are used as family transport by Donald and his son Geoffrey. Or at least they were then. Maybe now they've got Jensens. They should be so lucky.

Donald always has been a bit of a wheeler-dealer, making his name mostly with the Austin-Healey and the later smaller Sprite, but before then he worked with various engine manufacturers, Nash among them, building sporty 2-seaters around the different engines. In a slightly more complicated sort of way it looks as though he has succeeded in doing the same thing again.

The Jensen plant at the moment is running at about one-third total capacity and a new sports car aimed at a gap in the market so wide you could drive a bus through it could be just what the bankers who are backing Jensen after bailing the firm out financially are looking for. The new car will probably use as many already available production parts as possible, with an engine from a US-owned UK offshoot like Ford or Vauxhall. My guess is that Jensen will be looking very hard at the upcoming 120-cid, 4-cyl. Ford overhead cam engine that will be shipped from Germany to Detroit to power the new subcompact Pony. It will also be built in the UK for the new Cortina due out at the same time. However, there is also the possibility that Jensen might use the already available 120-cid Vauxhall Victor engine, which also has an overhead cam, but it has the advantage, with a low hoodline in mind, that it cants over at an angle of 45 degrees.

That would suit things fine if the only market aimed at was Britain and your part of the world, but if Jensen is to consider Europe as well it could pull a Lotus deal and use a Common Market engine which then opens a lot of trade barriers on the continent that might otherwise stay closed. Lotus uses a Renault engine in its mid-engined Europa—and even picked up Common Market points with the name of the car!

Carl Duerr, the American company doctor who moved in three years ago and nursed the Jensen organization back to health, has not followed his usual practice of moving on to another floundering corporation. Instead he has been bitten by the automobile bug and is sticking with Jensen and cranking on a big sales push in Europe with the Interceptor, and he just happens to be based in Munich, where the BMWs come from. This possible use of the BMW engine could make lots of sense because (a) BMW doesn't build a sports car even though the little sedans perform better than most sports cars; (b) it is already well established on the American market, and (c) BMW has a racing division which takes part in sedan championships in Europe and also tries very hard with its own engines in formula 2 single-seaters. There are precedents in BMW's history for farming engines out for sports cars by other makers, so I guess it could happen again.

The Healey/Duerr/Jensen set-up could just ring the bell with their sports car because they have the advantage of Healey's experience in the specialized field they are entering, and also are small enough to be able to regard as high-volume what would be low-volume to British Leyland or Ford. Ford says it doesn't want to build a 2-seater sports car in Europe because it can't afford to waste an assembly line on what would be, to Ford, a comparatively small seller. In the past Jensen has had contracts from BMC for the Healeys and from Rootes for the Alpines and Tigers. The bodies were built, painted and trimmed at the Jensen factory, and the decline of the company fortunes started when the Healey and Tiger were terminated. Jensen also built its own cars, but they were expensive and the company set its sights so low that it could afford to use only a corner of the factory to build its own machines while the rest of the premises was used to earn money from the bigger factories.

Jensen is moving arm-in-arm with Chrysler into the US market with the $15,000 Interceptor and later the 4-wheel drive FF, so just sit back and watch the progress of the revived Jensen company with Pa Healey at the helm. It sounds as though Jensen wants to build the sort of cars we want to buy.

Fiat is only just recovering from the wave of metal workers strikes that

crippled the Italian motor industry last year and cost Fiat alone 270,000 cars, worth about $500 million. Production was set back six months and Fiat hopes to have the new 1.6-liter (not 1.8 as I mentioned a couple of months back) 124 Sport Coupe on sale in the States this October as a 1971 model. Buy one. I flew down to Turin to try the new bigger engined (it used to be 1.4) Sport Coupe, the 2.4 Dino coupe, and the latest V-6 130 sedan which is a rapid sort of businessman's express and a cross between a Mercedes and a BMW.

After driving the Dino along a 100-mile mixture of flat-out Autostrada and moutain roads up almost to the foot of Mont Blanc on the Swiss border, I'm inclined to think that the 124 coupe does a better job for what it is, than does the Dino. In their price ranges I suppose the Dino runs against the Porsches while the 124 coupe is in the same class as the MGB and stuff like that. The Dino has a 2418cc V-6 engine with an iron 65 degree Vee block, initially turned out by Fiat to Ferrari's design so that it could get the formula 2 cars by the FIA. Fiat's Dino is front-engined, while the road-going Ferrari Dino is mid-engined. The V-6 gives a meaty 180 bhp, and with the 5-speed box with well-spaced ratios you get to 50 mph in 6.2 sec., 100 in 22.8 sec., it goes through a standing quarter in 16.1 sec. Top speed is 134 mph according to the speedo during my test run.

I'm a bit hopeless in mental calculations between kilometres per hour and miles per hour and I thought that the Dino was a bit nose-light and wandery in fast corners on the Autostrada, but when I sat down and worked it out, it probably had a right to be since it was doing an indicated 130 mph most of the time and there was a gusty wind coming down the mountains.

With 100 bhp from the 1608cc twin cam 4-cyl. engine the 124 coupe doesn't have the same top speed, but looking at the acceleration figures on a cost/performance basis, the 124 probably comes out ahead of the Dino as a good buy. It does 0-50 in 6.8 sec., 0-100 in 29 sec., the quarter in 17 sec., and top speed was 111 mph. Torque and the general gutsy feel of the car is an improvement over the 90-bhp 1428cc version. The 1600 engine now comes as an optional extra that you really want to have. Whereas the 1400 would just scrape over the 100 mph, the 1600 now cruises above the ton.

The 5-speed box in the Dino was better than the four-and-overdrive-five in the 124, the Dino being laid out Porsche pattern in the shifting gate, and the 124 the same as the Alfa gate.

As tested the Dino had three dual-throat Weber carburetors, but they are working on a US emission control version using the Brico electronic fuel injection (as on the Aston Martin) and they hope to have the car ready for American consumption by the end of this year. The Dino comes as a 2+2 with comfortable individual seats in the back rather than a padded bench, and also a 2-seater spyder. The 124 is also a 2+2 and spyder.

Finding enough cars after the strike to satisfy the home market as well as the export market is Fiat's biggest problem at the moment. Now that Fiat has taken over Lancia's financial grief—the story goes that Lancia lost money on every car sold since the war—there is a chance that production of the 124 sport and the Dino might be shifted to the Lancia factories which are only working at one-third of production capacity.

The 5-seater Fiat 130 doesn't look very exciting outside or in, but even with the Borg-Warner automatic transmission tacked onto the 160-bhp 2866cc 60 degree V-6 engine, performance is surprising. I chased one for miles down the Autostrada when I was in a 124 sport coupe and it outran me into the distance so it must have a top cruise speed up around 115 mph. Once you get accustomed to the power assisted feel of the wheel in the 130, you can really punt it along. The consensus after the tests was that the 130 steered more accurately than the Dino! But don't start getting excited about the 130, because Fiat doesn't intend to sell it Stateside. Fiat will be busy providing cars to chase the new BMW competition in Europe.

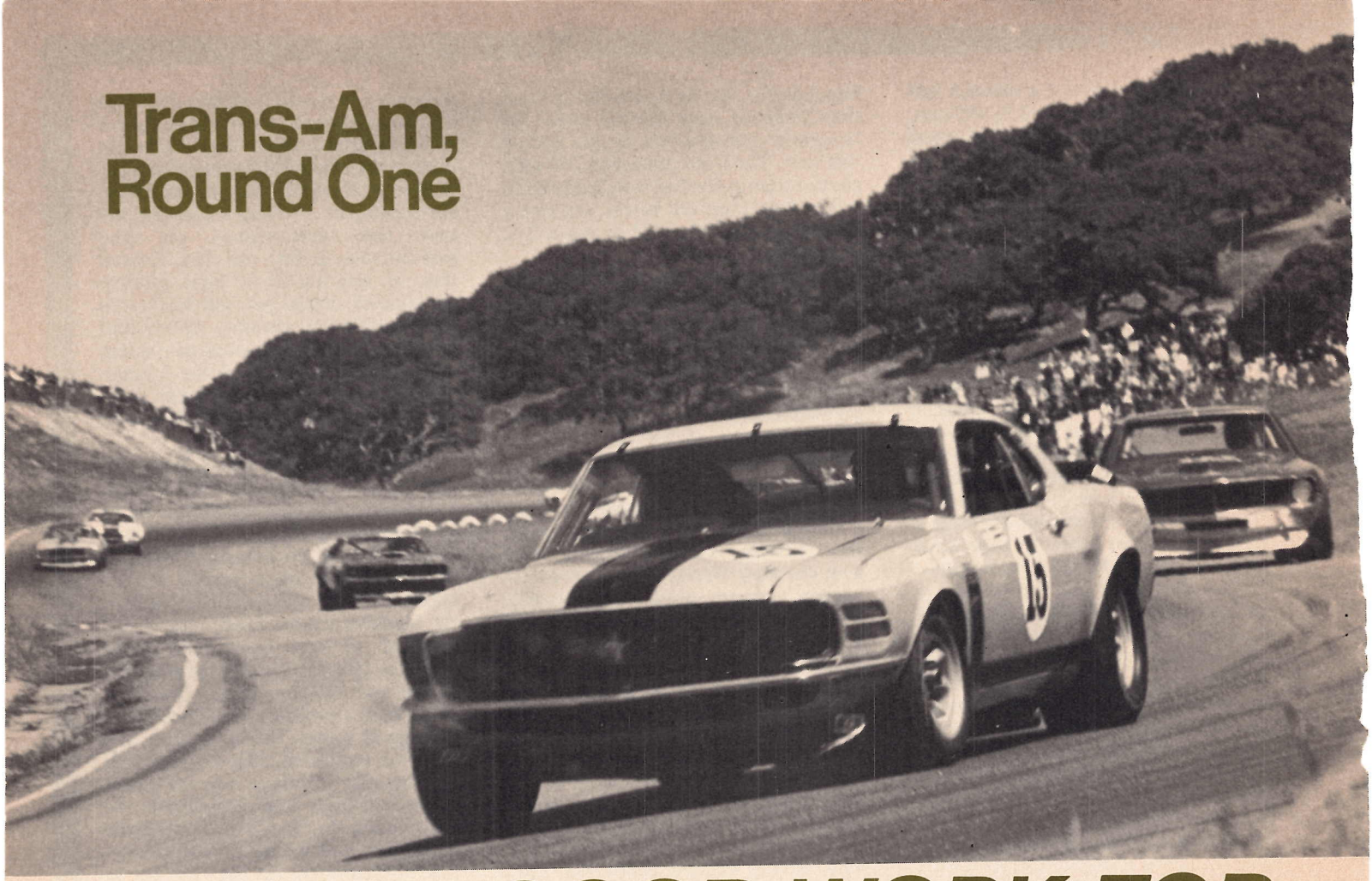
Fiat flew 20 scribes down from England to try the new cars (well, they were new last year) because it looked as though it would be forever before the new cars came to England. Taking a bunch of Mohammeds to the mountain, so to speak. The idea was to drive the cars from Turin up past Aosta and into the mountains to the ski village of Courmayeur. We lunched, if that's the word for a four-hour nosh, at La Maison de Filippo at Entreves, a little village up under Mont Blanc with snow up to here everywhere. There were thirty courses on the menu, and it finished up with a special sort of coffee which had a name as long as your arm, but consisted of coffee and Grappa—a fiery Italian brew that tastes like boiled cricket bats—in about equal proportions. This mix is sipped from a thing that looks like a wooden teapot with six or eight spouts which is handed around the table for individual swigs. I hasten to add that while this was going on, Fiat reps were out in the snow hiding the cars and we went back down the mountain in a bus!

Citroen has a reputation for laying down a design that has to last for a minimum of 20 years or so, or it's regarded as a failure. It often takes that long to come up with a design for a new car, so maybe it's cause and effect. Anyway, you can imagine that the Citroen designers were more than a little surprised when they were discussing their new V-6 engine with Ingh. Alfieri at Maserati. They asked Alfieri for a compact 150-bhp engine for the new high performance car (the just-announced SM) and they stressed that it was to be a high priority super-quick design job and had to be done within six months. Alfieri told them he could have a prototype running within three weeks, and the 12-man French team must have gone away thinking the good engineer had been on the turps, or Grappa.

Alfieri waited till they'd gone out the big gates of the Maserati factory, which looks like a coalyard even when it's dressed up for a visit, and then popped into the workshop and chopped the back pair of cylinders of the 4.2-liter V-8 to make a 90 degree V-6. He blanked off the block and heads, designed a new crank and three different camshafts and in ten days the engine was fired up on the test bed. There were a few leaks to seal but it gave very good power, nearer to 200 bhp than the requested 150. On the 16th day he sent off three sets of power curves to Paris and telephoned the information that the Citroen men could come back and see his prototype anytime they wanted. On the 17th day he rested, presumably. And that's how the power unit of the new Citroen SM was born. It's an unusual 90 degree V-6 with unequal firing impulses and a normal 6-cyl. 120 degree crank. Primary balance is fully taken care of, but the secondaries seem to have been ignored.

Motoring journalists are generally regarded to have a pretty peachy sort of life dashing about all over the place driving new cars and living off the fat of the land at the car manufacturer's expense, but there's also an element of risk involved. *AUTOCAR* was testing the 7-liter Monteverdi GT on the MIRA test track in England, running for top speed down the long straight at the end of which was a carefully laid-out series of curves, maximum speed 50 mph. Welshman David Thomas, top driver on the magazine staff, was at the wheel and they were well down the straight to get top speed at just on 130 and he lifted his foot off the pedal to get it all gathered in before the slow corner. But it just kept charging on with the throttle wide open! The linkage had gone over-center. Thomas reached forward and switched off the ignition in a blur, then devoted all his time to taking the whistling Monteverdi through the curves at what must have been nearly 100 mph in neutral! Afterwards when his hands had stopped shaking he said in his quiet slow Welsh accent, "I was wondering as I switched off the ignition, whether it would lock the steering as well . . .!" ■

Trans-Am, Round One



PRETTY GOOD WORK FOR A ONE-EYED FAT MAN

Parnelli's Mustang won Laguna Seca going away. Javelin fans went home with their heads held high. And Camaro needed a little help from its friends.

BY ALLAN GIRDLER

PARNELLI JONES was buying a Sunday paper at race headquarters. The space between the left lens of his sunglasses and his left eye was stuffed with bandage. On Friday, a sliver of metal hit the eye. On Saturday, with his vision blurred, he was fastest qualifier for the season's first Trans-Am race.

"How's the eye?"

"Oh, it looks terrible, but I can see OK. They just told me to keep it covered when I didn't need it."

"Would it hurt your feelings if I said you looked like an amateur at work? I mean, you always look like you're enjoying yourself in the Trans-Am races. You're not trying to get a reputation, and you don't need the money."

"Yeah, well, these cars are fun. They're safe. You know, I work for Ford and Firestone, and they like to have me win races. Besides, it keeps me from getting fat."

So with a bad eye and a mid-section that has to be kept in line, Jones took the lead at the flag and pulled away. If a man can make up for a year in a day, Jones did it for Mustang at Laguna Seca.

From the first lap on, the other drivers could only hope for last year. The burst of opening speed was nothing new; time after time in 1969, Jones' Mustang was the fastest until it came apart, or the crew did something wrong.

But this day, Jones set the pace and held it, lapping always within a second or two of his qualifying time, in itself a course record. The others fell back; by the time he made his first pit stop, Jones had lapped everybody except Mark Donohue in the Javelin and George Follmer in the second team Mustang, and Jones was giving Follmer a bad time.

The pit work was just as good. The rules allow two 11-gal. cans, to be carried to the car and upended in the filler neck. Nobody dropped one or poured fuel down the brake scoops. And the tires were all changed before the fueling was finished. Bud Moore's crew did not have the winter off.

Ford engineers were at work, too. Jones' pace seemed a challenge. He would win or the car would break. He won. Follmer's car sounded just as strong and he, too, stayed in the race the full 100 laps.

Preparation, or preparation time,

PHOTOS BY BOB TRONOLONE AND JOHN DINKEL

looked to be the key. If you had predicted the winner on the basis of how much time each factory team had with its car, you would have had the points standing at the end of the first race.

First to Ford, with the same basis car, crew and drivers. Everybody on the team knows his job. The car only needed refinement. Just as important, the Boss Mustang is unquestionably a production model.

Donohue finished second. The Penske Team is the best, but the car is new to them. The first race cars were built in early January, when some of the other teams didn't know what their cars would even look like.

The SCCA only counts the best finisher for each make. (This is a championship for makes, not drivers or teams.) So Follmer's third place didn't add to the Mustang score.

Barracuda got three points, for fourth, via Swede Savage. He also helped the fans, by providing half of one of the few duels in the race. Savage qualified behind Sam Posey's Challenger. Savage caught Posey, harried him, passed him and ran off. Dan Gurney's crew has racing experience and Dan has Trans-Am experience, but the Barracuda is a new car and new to AAR.

Who would have thought to see the day Camaro's honor was saved by a private entrant? The top Camaro at flagfall was fifth, and it was a last year's Penske-built car, driven by Californian Milt Minter.

The 1970 Camaro got a late start, so late that the Owens-Corning Team decided not to field a car until the third race. Jim Hall had two cars at Laguna Seca, for himself and Ed Leslie. The handling wasn't sorted out, neither car was in contention, and both were out before the finish.

Posey finished sixth, for one lone point. Same time problem as Gurney had, but Challenger builder Ray Caldwell is new to professional sedan racing.

Firebird didn't get points. Jerry Titus came in seventh. If Hall is not a factory team because he gets help but no money, then Titus is a certified independent, because he gets help when Pontiac isn't put to any trouble. Titus and crew chief Dave Bean (former CAR LIFE engineering editor) have lots of experience being independents. Add to that the late introduction of the car, and you have an uphill fight.

THE CARS . . .

Were the best part of the day. Starting with Ford, we have pride again. Jones wasn't the only one who didn't enjoy snatching defeat from the jaws of victory. Corporations have feelings, too, you know.

Ford did cut back on its racing budget. Nobody who knows just where and how much will talk, but the Trans-Am program lost the least. Ford had two drivers, and three cars. Jones had two identical Mustangs. He'd practice in one, then the crew would adjust while he practiced with the other.

The Boss 302 had the most power. There's a timing trap on one straight at Laguna Seca. Jones went through it in 13 seconds flat, compared to 13.5 for the Barracuda, 14.0 for the Camaro and 14.5 for the Firebird. The dynomometer operators where the Boss was tested whispered a figure of 460 bhp.

And no tricks. Ford had one, in the shape of an inline 4-barrel carburetor. It looked like half an injector. The theory was that if the rules limited the cars to one barrel for each two cylinders, then it would be of benefit to have the intake lengths perfectly matched, by lining the barrels up between the cylinder banks. SCCA instituted the one-carb rule to make the cars look like production cars, so race officials decided the intent was to ban trick 4-barrels as well as dual 4-barrels. Not that it mattered.

The front suspension is standard parts, relocated, as the rules (you will see this word a lot in the coming months) allow. The rear axle is located ▶

JONES' Mustang about to lap Leslie's '70 Camaro.

LAGUNA SECA
continued

fore and aft by two sets of trailing arms, the upper ones running to just inside the rear hubs, the lower pair attached to the bottom of the differential. Trailing arms conflict with the path of travel dictated by the leaf springs, so the axle is free to slide back and forth on its spring perches.

Production status allowed the Mustangs to run with spoilers at both ends. The only no-no was the use of the headlight housings as brake scoops. The scoops were relocated in the front spoiler.

The team Mustang tires were good business. Jones and Follmer are both Firestone dealers in their spare time, and they used Firestone racing tires built on the principle of LXX road tires, with a braced sidewall and tread wider than the bead. The class rim limit is 8 in., so the Mustangs have more tire on the ground than they could get with the standard rectangular racing tire.

Javelin is still working away at the underdog role, and the horsepower claim is for just a bit more than 400. Much too modest; from the trap speed and the way Donohue kept ahead of Follmer, the Javelin looks to be down maybe 30 bhp, at 430. Making up the deficit is not going to be easy. The engines come from Traco, and more horses can be found with time. But the AMC 360 isn't as suited to racing as the Boss or the small-block Chevy. It's stressed with 430. The team used four engines practicing the week before the race, and one more on Saturday. The Javelin has an elaborate oil system, with a diamond-shaped inner pan with one-way valves surrounding the oil pick-up. Oil can't slosh out of reach. And at Laguna Seca there were several external drains, from rocker covers to trick pan, to make sure all available oil was going in. Too much, said the officials, and they directed the removal of the drains before the next race.

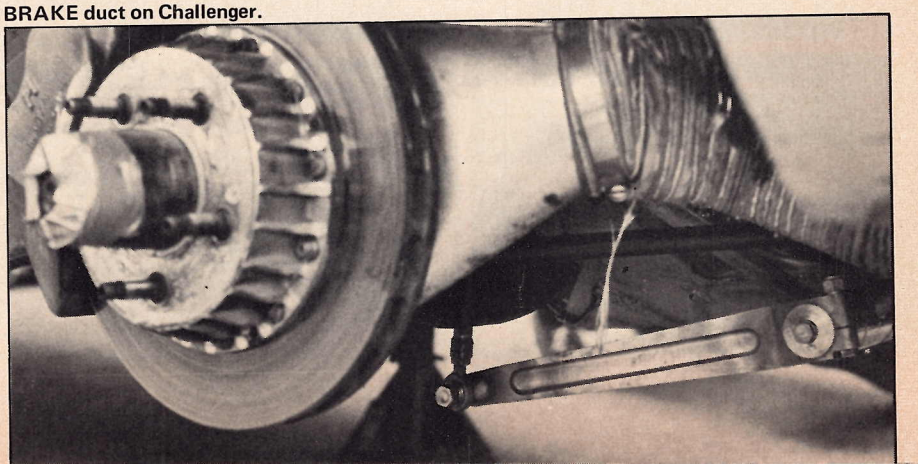
The rear suspension is the sort of thing that justifies Penske's reputation for magic. The rules say that you can substitute hubs. The intent was to allow stronger hubs. After all, what else is there?

Toronado hubs. Front-wheel drive hubs. They can be adjusted for camber, so the Javelins have de-cambered rear wheels, for that extra bite. U-joints inside, so there's no extra strain. Seems to work; Donohue was very tidy and as fast around the corners as Jones.

Penske doesn't worry about the ad

PANHARD rod was used to locate Cuda axle.

BRAKE duct on Challenger.



men. The team's front and rear spoilers were accepted, and in place. But the hood scoop, also accepted, is in a low-pressure area. The racing cars don't use it. The intakes are blocked off, and internal ducts route cold air from inside the left fender.

Barracuda and Challenger start even, with engines from Keith Black. The blocks are the new 340s, with stronger lower ends and extra material in the heads, so the ports can be enlarged and reshaped. Gurney could pull even with Follmer early in the race, but couldn't get past him. Gurney is the better driver, so the Mopars are in need of more power, too. Call it 430 at this stage. Rumors of engine bothers pre-race, but no sign of weakness. Gurney's pressure plate sheared; Savage and Posey finished.

The front suspensions of both makes are identical, and nearly stock. The chassis men say that lowering the front gives the cars almost perfect geometry, with the other wheels remaining upright.

From there, the cars go to different shops. The Barracuda rear suspension is the plain ol' live axle, with a Panhard rod for location. The Challenger had three, count 'em, three, Watt links. One on each side, for fore and aft control; the third transverse, to keep axle and body in line.

Clever, but not noticeably better. Late in the race the Challenger was leaning very low in the turns and looked hairy coming out. Posey said post-race that the torsion seemed to be going out of the bars.

The production requirements for both makes were met, and there was no kick about body additions. Gurney was told to plug the high-pressure fittings supposed to allow oil additions with the hood closed. The SCCA requires the hood be opened on pit stops, so they couldn't see any reason to let the oil go in without an open hood.

The Camaros simply weren't sorted out. They probably were closest to the Mustangs on power. This may not be an advantage; the AMC and Mopar engines are just being looked at by experts. What possible tricks can there be left in Mighty Mouse? The intake system was beautiful; no other word applies. The radiators are moved back, and a duct built at the top of the old space. Then another duct, mating with that and attached to the hood underside. A shaped hole in that, mating with the top of the air cleaner. Last year's production cold-air hood isn't offered this year. The racers don't need it.

The front suspension was mostly stock parts moved about. The rear axle had a Panhard rod, and that's all there was. The system surely is right, but the details haven't been taken care of. Hall and Ed Leslie were very busy, with crossed hands and dirt-track stances at times when tough ol' Parnelli was motoring through.

The only loss to the rules committee was the extra-high D-80 rear spoiler. It's a late addition to a late car.

And Hall's car retired, with a broken transmission. *That* never happened in the old days.

Firebird problems beggar description. The factory didn't have the Trans-Am model produced and/or certified, so Titus was reduced to running a plain Firebird. Off with the front spoiler, the dive planes, the rear spoiler, the hood scoop! The SCCA does allow smaller front spoilers, so Titus built one. No go, as it pulled the front down and raised the rear of the car at speed.

FIREBIRD lost horsepower when SCCA ruled against hood scoop.

SCCA forced Titus to remove rear spoiler.

Titus had counted on the hood scoop, and didn't have an internal alternate. The de-stroked 400 had about 430 bhp when it got to the track, and 410 when it was allowed to begin practicing.

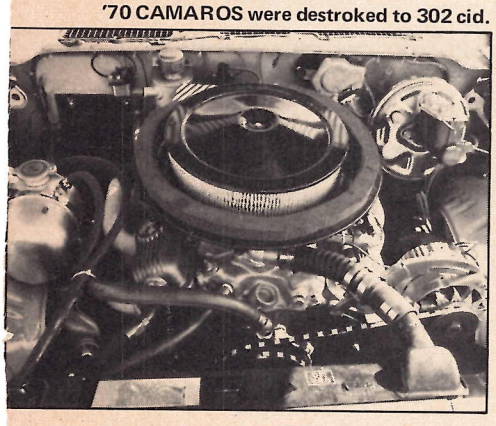
The engine is heavy. With power-assisted steering and brakes, the car weighed 3300 lb., or 100 more than the limit, which all the other cars made. All 100 was in front, understeer resulted. The Firebird ran big tires all 'round, to compensate. That meant Titus had to hang the tail out to get the car around corners, then he couldn't use all the meager power because all his traction was used up. Such a day!

Miscellaneous notes: The teams came with gearboxes for the course. Laguna Seca has hills, where fourth gear is too high and a normal close-ratio third, 1.2 or 1.3:1, is too low. A third gear of 1.12:1 was the order of the day.

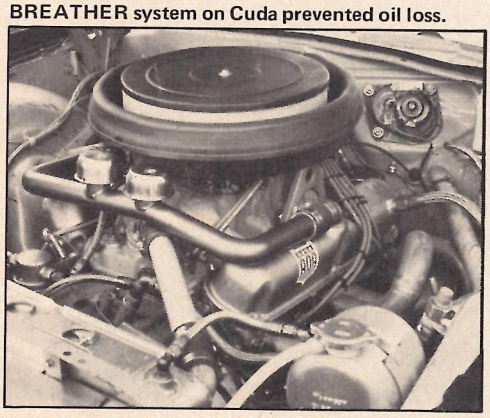
Everybody except Ford and Chevy used huge, alloy Hurst/Airheart disc brakes on all four wheels. Bigger than stock, and they save 20 lb. per wheel.

There's more to come. The cars aren't showroom cars, but they are very good racing cars, and this is the best series around. If you have a chance to go watch, and don't, go out to the garage and drive over your toes. You deserve it. ■

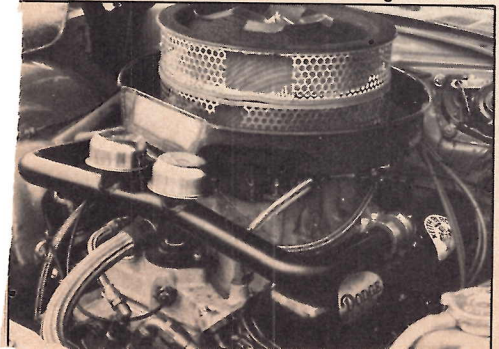
'70 CAMAROS were destroked to 302 cid.



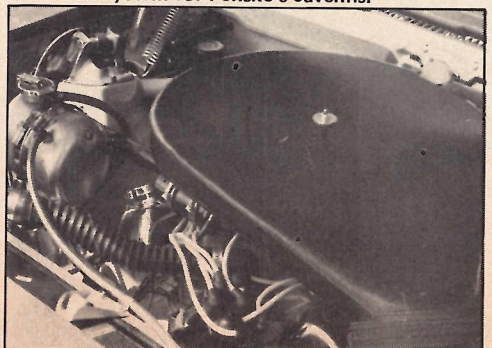
BREATHER system on Cuda prevented oil loss.



STACKED air cleaners fed air into Challenger 4-barrel.



COLD air system for Penske's Javelins.



CAR LIFE REPORTS

RIVERSIDE was the stage, April 19, for the inaugural race of the 1970 SCCA Formula A series.

Nobody knew it was going to be a re-run from last year, not even John Cannon, who ended up winning like last year, except for the fact that this year his mount was a spanking new McLaren-Chevy, not the Eagle he drove in '69.

Although Cannon's car was a new design, he had plenty of time to test it, having driven more than 700 miles at Riverside testing tires previous to the race.

Cannon's average speed was 113.577 mph during the 100-mile race—only 3 mph slower than his qualifying speed.

Second in the race was Davy Jordan, 33, a sheet metal worker from Cypress, California, while veteran Chuck Parsons was third.

Drop-outs from the race included the young Japanese superstar, Hiroshi Fushida, 24, who drove for Honda while still a teen-ager and was a Toyota factory team driver. Driving Swede Savage's old Eagle-Plymouth (CAR LIFE's cover car in February), Fushida held third place until he blew his engine.

Dick Smothers also dropped out, after only one lap. Very embarrassing. His Lotus broke its bellhousing, but the race announcer somehow thought the car had ignition problems. Smothers' sponsor, Echlin Ignitions, was not amused.

DEATH of cars in California will probably start in San Jose, a city of 400,000 south of San Francisco.

Goodyear recently announced that it will build a 6-mile long mass transit system in the city's downtown area. The system, consisting of small, engineless cabs riding on conveyor belts, can carry up to 22,000 persons per hour.

Construction is expected to start in 1972 but some San Jose State College students couldn't wait. They held a ceremony in which they buried a brand new 1970 Maverick as a protest against air pollution. Ironically, the '70 cars produce less smog emissions than earlier models. Some students are slow learners.

TALLADEGA saw Pete Hamilton, Plymouth's new star, zoom to first place in the inaugural Alabama 500 Grand National in his '70 Plymouth Superbird.

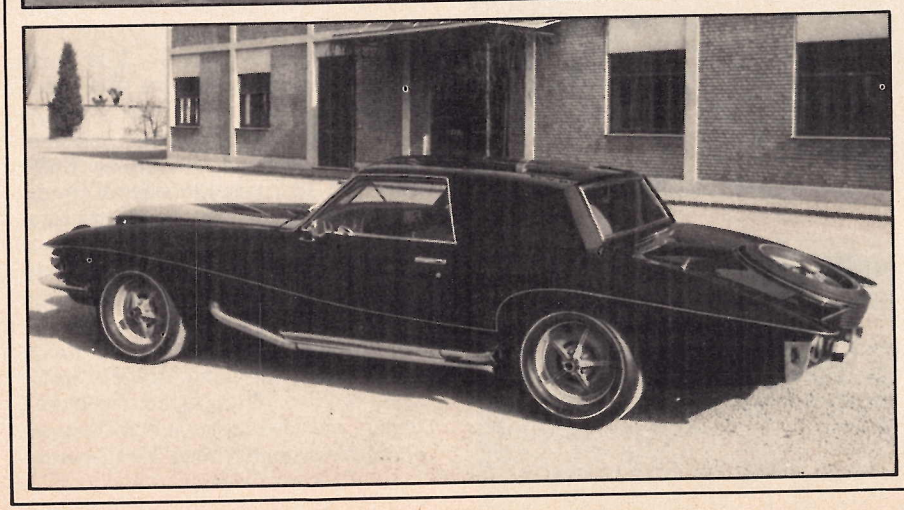
Hamilton, who hails from Massachusetts, was nearly a full lap ahead of his nearest competition, Bobby Isaac, who was driving a long-nosed Daytona Charger. Third was David Pearson in his Ford Talladega.

Hamilton averaged 152.321 mph during the race, which was witnessed by over 53,000 grandstand spectators and a national television audience.

The speeds at Talladega were high. Bobby Isaac set a track record in time trials with a 199.658-mph lap and Buddy Baker set a world closed course record of 200 mph the week before.

Baker had a scare in the race when his Daytona Charger blew its engine, and caught fire. He spun the car intentionally, hoping to snuff out the flames, and succeeded.

Richard Petty, Hamilton's employer, told reporters jokingly that "Pete's getting all the good stuff on his car." Petty himself finished seventh, running on seven cylinders toward the end.



STUTZ, once the hottest name in street cars with the Super Bearcat, is being revived as a nameplate on the most expensive car line ever to be offered to the American public—from $22,500 to $75,000. The manufacturer is the new Stutz Motor Car of America, Inc. of New York.

The lowest priced Stutz will be the 2-door Blackhawk coupe with an electrically controlled sun roof. The body is made by Carrozzeria Padana in Italy while the engine, automatic transmission and chassis are supplied by GM.

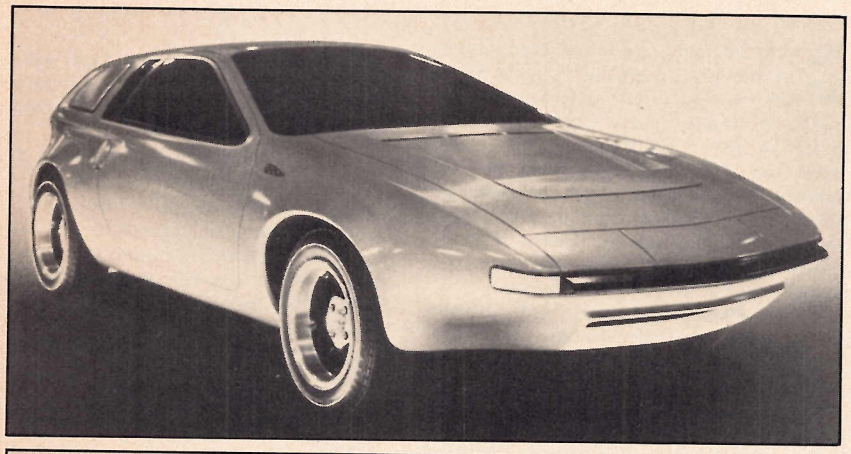
The 400-cid Pontiac V-8 has a claimed bhp of 425. Additional performance notes are Koni shock absorbers, 17-in. wheels running Firestone LXX tires and 4-wheel disc brakes.

Standard equipment in the super luxury car includes two pieces of leather luggage which fit into a compartment behind the two bucket seats, air conditioning, an electric jack and a stereo tape system.

Like the old Rolls-Royce legend, the new Stutz Motor Car Co. will send mechanics anywhere in the world to fix one of its cars, although they can be serviced at most GM dealers.

Stutz displayed a car at the New York Auto Show and promises to build 100 Blackhawks during 1970. Other cars in the line will be a Blackhawk convertible for $25,000; the Indy, a roadster for street use at $25,000; and a $29,500 limousine. If this hasn't emptied your pocketbook, how about the V.I.P. at $75,000?

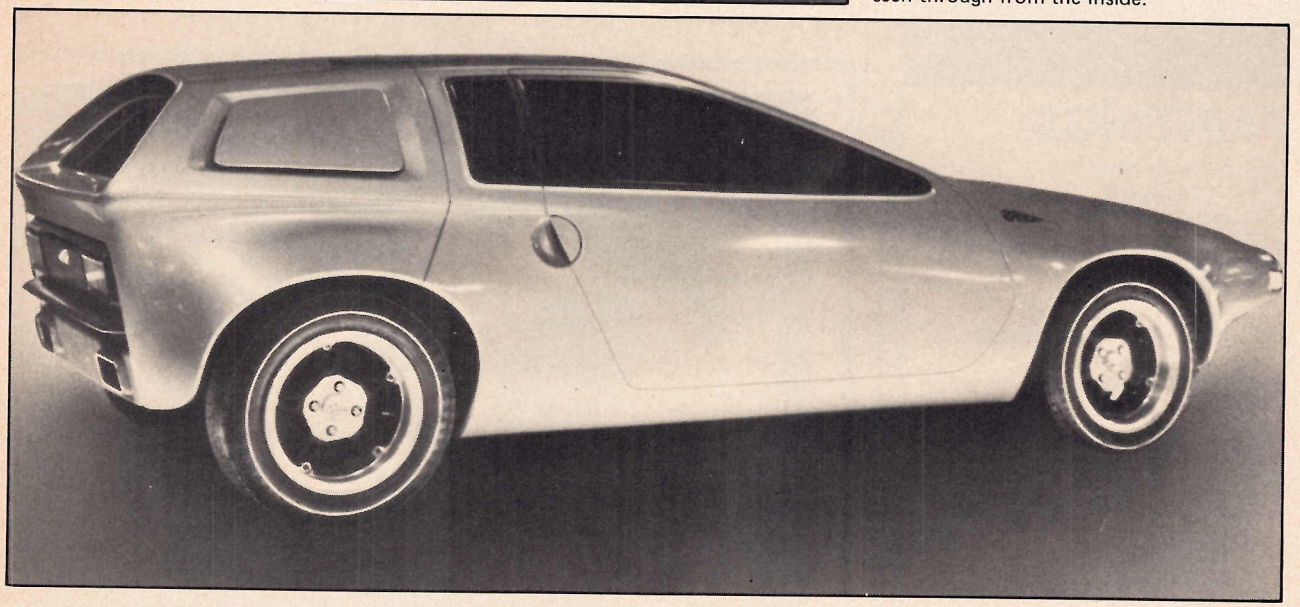
While these prices seem high, the census reports there are hundreds more millionaires now than a decade ago and if you've got to look different . . .



ZANDA is the name of a wild 2-seat mid-engined prototype car created by British Leyland, the combine that owns Austin, MG and Jaguar.

Recalling the lines of some of the super sporty wagons designed by Harry Bradley (CAR LIFE, April, 1970), the Zanda's contours were refined through the use of a computer which used "light rays" to visualize various conformation until the final decision was made.

A unique facet of the car's design is the one-way glass used all the way around. It looks black from the outside but can be seen through from the inside.



ROYAL BOBCAT was the name used by those rip-roaring custom-tuned Pontiacs once sold at Royal Pontiac in Royal Oak, Michigan.

The Bobcat lives! Leader Automotive, which under the direction of George DeLorean, set up the original Bobcats, still is in the business of making Pontiacs go. Among the latest Indian goodies they offer are:

The Bobcat Engine Package: thin head gaskets to block the heat risers, gaskets, distributor curve kit, hydraulic lifter rev kit, and spark plugs to match the new tune.

A special high-performance exhaust system. Combined with headers this system will give the effect of open pipes at full throttle and yet be quiet enough at moderate speeds to save you from a ticket.

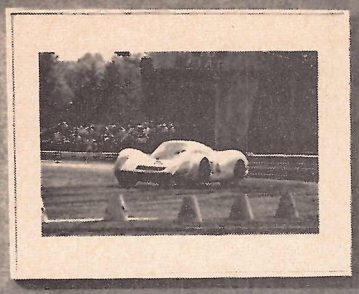
NHRA Legal Heads: Send your tired, your poor . . . your heads to Leader and they will cc and cut them to legal specifications, doing a performance grind as well.

Leader even gets into the men's accessories business by offering GTO cuff links and tie bars. For the prices on all these parts and services in a new catalogue write to Royal Racing Team, 1956 Hilton Road, Ferndale, Michigan, 48220. Tell 'em Tech Auto sent you.

CHILD seating is the latest concern of the Federal Department of Transportation which has ruled that by January 1, 1971, a restraint system must be built into passenger cars to accommodate children between the ages of six months and three years.

The performance criteria for the new child seating systems are still being refined but soft sponge rubber is out, according to the Department, "because it offers little impact protection." The Department would prefer materials that absorb shock and don't re-transmit it.

Several auto-makers offer child-carrier seats—actually miniature buckets that attach ▶



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CAR LIFE REPORTS

continued

to a regular seat—but the present designs are more for keeping the child from wandering around the moving car than to protect him from the loads of an impact.

In Sweden, development work has been going on for several years on infant safety seats—most of which face the rear of the car and are attached to the instrument panel. Presumably, the forthcoming American designs will make use of the Swedish research in this area.

CRUNCH could be a disappearing sound on America's highways if John Fitch gets his way. Fitch, a famed race car driver from Falls Village, Conn., who used to be on the Mercedes works team and drove for Chevrolet at Sebring in '57, recently demonstrated what he calls an Inertial Barrier System, consisting of plastic barrels of sand which are placed at sharp points on intersections to slow down the impact of out-of-control automobiles.

Using remote control cars, Fitch crashed several cars into the barrels with little damage to the cars. Fitch drove one car into the barrels at 50 mph and emerged unhurt!

Now installed on a Connecticut freeway, the barriers are not anchored but simply sit there waiting for an impact. They're designed to prevent a car from ramping over them or nosediving under.

Supplier of the plastic is Union Carbide of Morristown, N.J.

Fitch hopes that his barrels will be purchased by state highway departments and cities interested in covering trouble spots at bridge abutments, railroad viaducts, bridge supports or other spots where a driver's bad judgment can put him into an immovable object at speed.

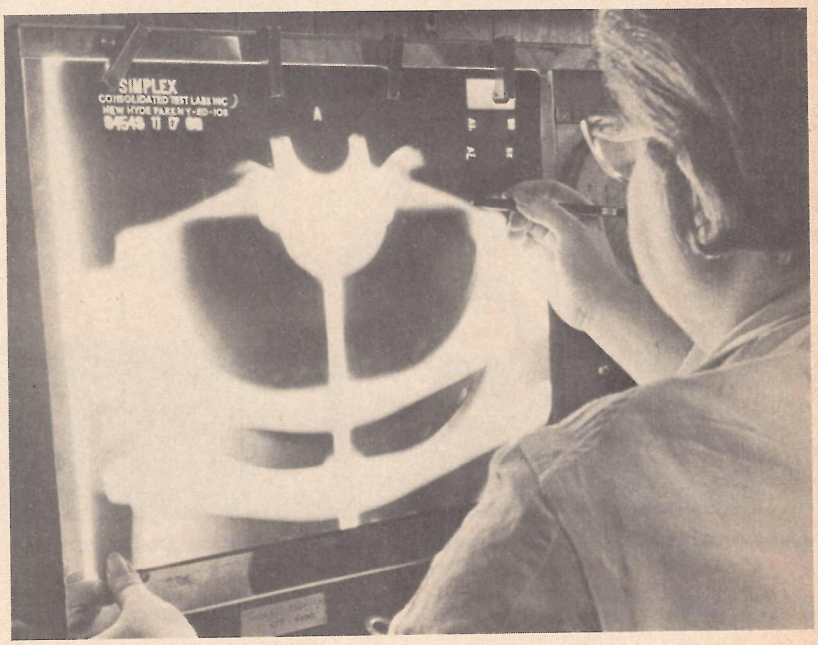
CORVETTE fans will find plenty to interest them in a new book by one of our most frequent contributors, Karl Ludvigsen.

The book is Guide to Corvette Speed, published by the Sports Car Press.

Over 117 pages in length, the book contains pictures of vintage Corvettes, one-off experimental styling cars and special racing Corvette such as the Grand Sport, the Sebring SS Vette and the Cerv One Single Seater.

In addition, there is a chapter on tips for street speed and another chapter on preparing Corvettes for racing.

Ludvigsen talked to our friends, the Owens-Corning Team, and gathered a few



X-RAY used to be what you had done to your leg after your safety bindings refused to open when you went up like Jean-Claude Killy and came down like the three stooges.

Now, X-rays are being used to examine automobile innards.

Recently, a vintage Simplex worth $50,000 and owned by Henry Austin Clark's Auto Museum on Long Island suffered a cracked crankcase. Rather than patch the old case, Clark had two new aluminum castings made and decided to X-ray the rough castings before okaying their finishing and installation.

A testing lab in New York City made 12 radiographs of the castings, reports Clark. Some shrink flaws were found but were judged not serious.

Clark is in the business of restoring high performance cars of many eras. He says that the radiographic (X-ray) method is a non-destructive way to test parts and recommends its use for anyone looking for a new analysis tool.

tips which even Corvette owners who don't plan on racing will find useful.

A final chapter is on Corvette people, saluting the sung and unsung who have made the Corvette what it is. One whose name we haven't seen in print before is Bob Clift, a Corvette test driver who once was the Terror of Waterford, an SCCA track near Detroit, in his old solid-axle '56 Corvette.

The book is distributed by Crown Publishers, 419 Park Avenue South, New York, N.Y. 10016 and costs $2.45 a copy.

COMPACT and small domestic cars are outselling the imports.

In March of 1969, U.S. compacts plus the imports took only 18% of the auto market. By March, 1970, the two groups claimed 26.8%. (Of course, last year there was a dock strike and the Maverick and Gremlin were still un-introduced.)

U.S. compacts sold 13.2% of 90,639 units, during February, 1970, compared to the imports total of 12.7% or 86,909 units.

When the new Ford small car and the Chevy XP-887 hit the scene, the imports could be hurting even more.

PRANGED cars should be "delicensed" until they are inspected by proper authorities to see if they are safe to travel again before being allowed back on the roads.

That's what a recent recommendation to the National Highway Safety Bureau said. The recommendation was made by the Southwest Research Institute of San Antonio, Texas which reported on six States which have already have such a law: Indiana, Louisiana, Missouri, New Jersey, New Mexico, and Texas.

The inspection, by a state-operated agency, would cover such items as steering tie rods, wheel alignment, window condition, door latches, the electric system and tire and rims.

CHEVROLET parts are hard to find unless you have the part number. If you've got that, you're golden. But, if your Chevy dealer still denies there is such a part, there is another recourse we just discovered—a monthly magazine called Chevrolet Parts Mart that goes to all Chevrolet Parts Departments.

What you do is write down what you want, like "1954 CORVETTE: headlight grills, 5941627, etc." and then say "Contact" followed by your name and address.

Send all this to Parts Post, Room 1005, Argonaut "A" Building, 485 West Milwaukee Avenue, Detroit, Michigan 48202.

How much is the service? Chevrolet says it's free. Can't beat that!

BOB BONDURANT, 37, has opened a new School of High Performance Driving at the new Ontario Motor Speedway.

Bondurant's racing career spans a dozen years, starting with a Morgan and including several seasons with Corvettes. In 1963 he moved to the big time with Cobras, Ferraris, and BRM Formula One Cars.

Driving a fastback Cobra for Shelby, Bondurant co-drove to GT victories at Le Mans and Spa, and the Freiburg hillclimb. In '65 he helped bring a Ford GT-40 in third overall at the Daytona Continental.

Instruction will take place from 9 to 5 daily, including weekends when races are not scheduled. There are plans for a five-day program to learn road racing; a special course in freeway driving and a course in defensive driving that uses an accident simulator.

A fleet of sports cars and formula racers are provided for the student's use. Bondurant adds that his courses are open to women too. For information, write Bob Bondurant, Schoo of High Performance Driving, Ontario Motor Speedway Inc., 3345 Wilshire Blvd., Suite 1011, Los Angeles, Calif. 9005.

REFLECTORS are useful in that—even if you don't have your car's lights on—they pick up light from an approaching car to provde illumination.

Pontiac, in its '70 Safari wagon, has gone a step into the future of reflectors by making the entire simulated wood surface of the tailgate panel reflectorized. The resulting 4-foot wide band of light which pops up when hit by the beam from an approaching car's headlights, is a safety factor on clear nights and good insurance on foggy, or rainy nights.

STREET RACERS have no excuse anymore, at least not in Orange County, California, where the very hip Orange County International Raceway has instituted occasional all-night races, well publicized in advance.

The first one was May 2, from midnight to 7 a.m. in the morning, late enough to

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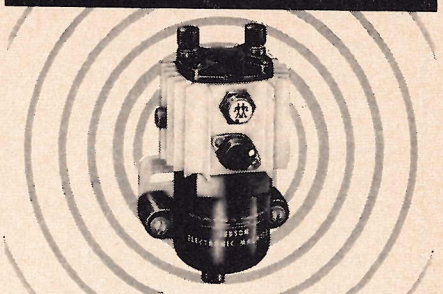

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accommodate even the most wide-awake night owls.

Oh, by the way, Orange County asks the Midnight riders to come in club colors if they have them. Those who do get 50¢ off the regular $2 admission price.

GOLD DUST, that powderey substance that once was the coin of the realm in Dodge City and like that, is the theme of a special bargain-priced Plymouth Valiant called the "Gold Duster," designed to give the Maverick Grabber a little competition.

STUMPED? BOTHERED? USE *ACTION LINE*

CAR LIFE'S *ACTION LINE* is designed to put the automotive enthusiast back in the automobile business. In effect, CAR LIFE editors pledge to be the middleman for all interested parties who have a problem, ideas, information, or a request for data. We ask only that the question be significant to a broad range of enthusiasts.

ACTION LINE requests made in letters are best—they can be worked on between writing assignments and passed from editor to editor to be reviewed by category during staff meetings. They should be addressed to *ACTION LINE*, CAR LIFE Magazine, 1499 Monrovia Avenue, Newport Beach, Calif. 92663. Limit requests to only one or two questions or suggestions per letter to avoid long delays in getting answers. Telephone calls, teletype messages and telegrams are also part of the plan. TWXs should be sent to 910-596-1353. Telegrams can be sent to our phone number in Newport Beach, Calif.—AC 714-646-4455. CAR LIFE editors will stay late on Monday evenings and take calls between 5 and 6 p.m. They should be prepaid (most will be under $1.50 for three minutes) and should begin with the caller's identifying himself. We'll try to keep the cost of the call down by taking information, asking the necessary questions, and quickly releasing the line. We'll have every available staffer on the phones. We also ask that any calls that don't go through between 5 and 6 p.m. California time be held until the following Monday evening.

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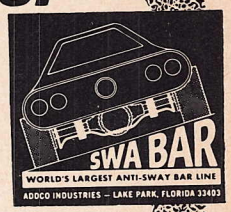

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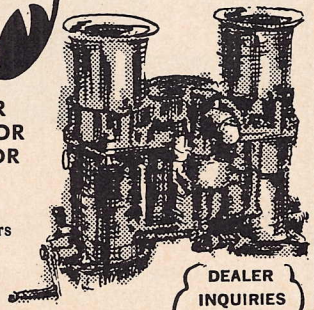

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Special gold paint trim and a dark colored grille identify the model. The 198 cid Six, D78 x 14 tires, vinyl trimmed interior and some chrome trim are standard.

Led by the Duster, Valiant sales have doubled over the amount sold during the 1969 model year, the highest increase posted by any car line in the industry this model year.

BUMPERS, are being knocked by the safety people.

The National Highway Safety Bureau held a public meeting in Washington in early April to lay groundword for a new proposed standard on bumpers.

Also meeting in Washington was the National Association of Independent Insurers, who estimate that, if cars had functional bumpers, over 40% of property damage losses could be eliminated.

Leading in the softer bumper race is Menasco Mfg. Co., a Burbank California firm which has developed and sold some energy absorbing bumpers.

The Highway Safety Bureau would like the new bumpers to be able to withstand a 5 mph collision without any damage to the rest of the car. GM bumpers, said GM at a Senate hearing last fall, protect only to 2.8 mph.

Tests by the Insurance Institute showed that on a typical U.S. built 1969 four-door sedan, a 5 mph impact could result in repair bills of $134 to $305, just to one car.

Insurance underwriters say they will lower rates on cars which come equipped with functional bumpers. ■

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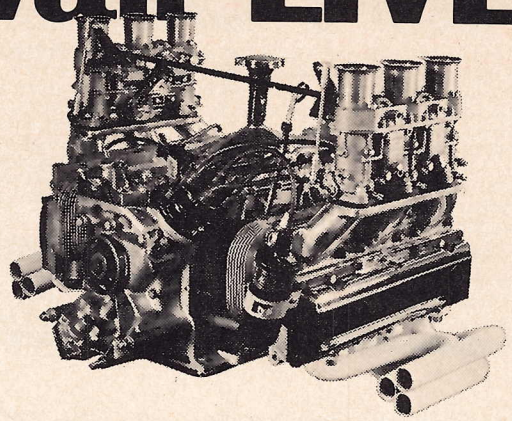

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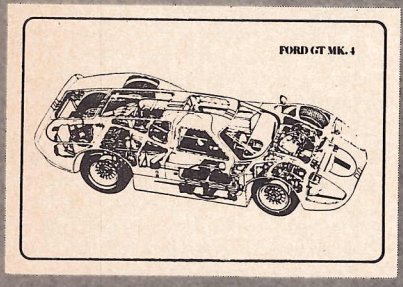

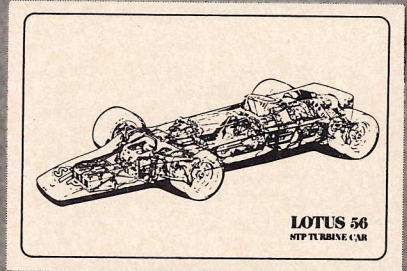

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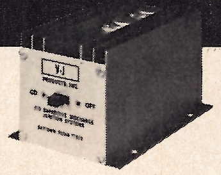

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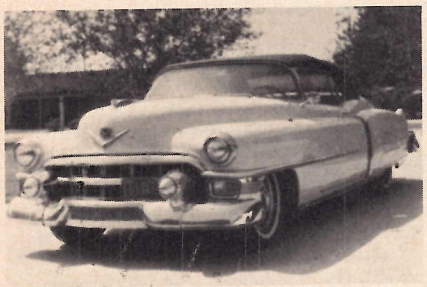
DEADLINE: AUTOMART AND CLASSIFIED ADVERTISING

All notices received on or before the 22nd of June will appear in the September issue on sale in mid-August. Changes or cancellations must be received by June 24. Address: AUTOMART, CAR LIFE, 1499 Monrovia Avenue, Newport Beach, California 92663.

Rare **1941 CADILLAC** 4-door, sunroof. Only 168 of these were built. Many spares, ready for restoration. Lack of storage space forces sale. Anaheim, Cal. (714) 635-8369.



1953 **CADILLAC** Eldorado, Number 64. Original owner. Full power, pink with black top. Showroom new. For collector, best cash offer over $2000. W. Price, 130 W. Berridge Lane, Phoenix, Ariz. 85013.

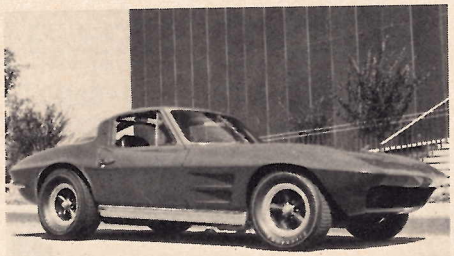
1955 **CHRYSLER** New Yorker Newport, 2-door. Power steering and brakes; factory air conditioning; electric windows, limited production model. $295. Allan D. Evans, Russell, Kan. (913) 483-3793.

1967 **Shelby COBRA** 427. 14,000 miles. Red, black interior. Never raced, immaculate condition. Custom Daytona engine: high speed valve train, pop-up pistons, heavy crank, 10 quart oil pan, special dress-up valve covers and chrome parts; electronic ignition; electric fuel pump; oil cooler, scatter shield; Konis; custom fiberglass fender and trunk liners; seven Halibrand mags and tires; custom tonneau, padded dash and dual speaker radio; original tool, lube kits, etc. $9100 firm. Paul V. Bonn, 222 N. Central, Phoenix, Ariz. 85004. (602) 254-6033.

1964 **CORVAIR** Spyder convertible. Electric top, turbocharger, rebuilt engine, new tires, full instrumentation. All extras. 80% restored. Needs paint. 60,000 miles. $600 or best offer. Alan T. Dane, 21 Prince Circle, RFD 2, Duxbury, Mass. 02332. (617) 837-3745.

1953 **CORVETTE.** Classic condition, completely original, 180-bhp Six. Three carburetors, Powerglide. Best offer over $3900/trade for 1968-70 Corvette in good condition. W. F. Terminello III, 324 Boca Raton Court, Walnut Creek, Calif. 94598.

1954 **CORVETTE.** Original, great design. Triple carburetor six, Powerglide, etc. Rare and good looking, good investment, pure fun. In daily use. $1900. Delivery possible. Thomas G. Carskadon, 529 University Ave., Boulder, Colo. 80302. (303) 449-2518.



1963 **STINGRAY.** Immaculate, candy red, new black interior, stereo tape player, 4-speed Hurst shifter. Completely rebuilt transmission and 327-cu. in. engine with Paxton supercharger, 425-bhp. Best offer. Call: Bob Meek, 1215 S. Ethel Ave., Alhambra, Calif. 91803. (213) 284-5936 or 288-8980, ext. 1628.

1969 **CORVETTE** 427 coupe. Black in and out, genuine leather seats, side exhausts, air-conditioned, electric windows, AM-FM stereo radio and tape. New F-60-15 Poly tires. All other available options. Perfect condition. 17,600 miles. $4900. (205) 871-7094. Herbert Luria, 3909 Montevallo Rd., Birmingham, Ala. 35213.

1958 **EDSEL** Citation, 4-door hardtop. Newly rebored engine and rebuilt transmission. $2000 or best offer. Also 1959 Edsel Ranger. $850. L. Habermehl, 152 Silver St., Agawam, Mass. 01001.

1958 **EDSEL** (the original) 4-door Ranger. Unrestored, complete with accessories including extra flipper hub caps (original) and "peep sight" hood ornament. Pictures on request. Best offer over $500. J. P. Calhoun, Box 198, Rte. 206, Andover, N.J. 07821.

1959 **EDSEL** Corsair convertible. 332, 3-speed automatic, factory air. New top, tires, rug. Black interior. One owner. Can deliver. $1250. Otis Groom. 23 Buchanan Ave., Amityville, N.Y. 11701. (516) 691-0398.

1959 **EDSEL** Corsair 4-door. All power, air conditioning. Original and superb condition. Cream yellow and taupe. Drive it anywhere. Best offer over $800. Pictures and particulars. Virgil A. Pierce, Box 80, 530 W. Elm, Canton, Tex. 75103. (214) 567-4087.

1959 **EDSEL** Corsair 4-door sedan, 361, 4 barrel, power steering, power brakes, factory air. Fine condition in and out. Asking $1700. Might take trade. S. N. Bixby. 1885 - 26th St., Marion, Iowa 52302.

1959 **EDSEL** Ranger 4-door automatic sedan. Clean, solid body and in running condition. Open for offers. Phone Abbotsford, B.C., Canada 859-4340. Gill Harder, 32647 Peardonville Rd., Abbotsford, B.C., Canada.

1959 **EDSEL** Ranger 4-door. Brown with yellow top. Stock 312, automatic transmission, 62,000 miles. Upholstery needs work, otherwise good. Photo and details on request. Dean Bigler, 1122 E. Hays St., Boise, Idaho 83702.

1963-1/2 **FORD** 427 fastback. Two 4-barrel carburetors, 4-speed, 4:11 H.D. racing suspension. Brakes, Wide Ovals, 19,000 original miles. Oxford blue. Never abused or driven on salt. Best offer. C. Gagliano, 965 N. 35th St., Milwaukee, Wis. (414) 342-3408.

1940 **HUDSON** Country Club sedan, 4-door. Immaculate condition inside and out. Original gunmetal gray finish. Upholstery excellent. $2000. Roland McNee, Mechanicsville, Iowa 52306. (319) 432-6502.

1956 **LINCOLN** Continental Mk II. 52,000 miles. Black, red and white interior. New tires. Full power and air. One of the finest. Near mint condition. Asking $4500. Joseph Katzen, 8312 Braddock Dr., St. Louis, Mo. 63132. (314) 993-3054.

Classic **LINCOLN** Continental Mk II. Bahama yellow, air, excellent condition. Sell $3000. Or consider trade for Porsche, real estate, mortgages, rare coins. John T. Hamilton III, 40 N. Swan, Tucson, Ariz. (602) 325-0232.

1957 **LINCOLN** Continental Mk II. Immaculate, original. Factory air, 39,000 miles. White with white and blue leather interior. $5500 firm. 3675 Happy Valley Rd., Santa Rosa, Calif. 95404. Phone (707) 546-9966.

1952 **SIATA** Torino roadster. 1965 Mustang 275-bhp 289 engine and 4-speed. Very good condition. $1800 or best offer or trade for 1957 Thunderbird. Car in Anaheim. Thomas O'Hearn, 1698 Alta Pl., Dubuque, Iowa 52001.

1958 **SIATA** 208S. Cobra engine, low mileage. Everything new: red paint, interior, Michelin tires, brakes with custom exhaust, headers and rear lights. $3600. Dr. C. B. Aronis, 5860 Locksley Pl., Los Angeles, Calif. 90028. (213) HO 9-0802.

1956 **THUNDERBIRD**. A classic in mint condition. Second owner. Custom paint, original interior, newly chromed bumpers. Mechanically excellent. $1400. (213) 254-4972 or 936-7161. Ed Toumanian, 2549 Hines Dr., Los Angeles, Calif. 90065.

1956 **T-BIRD.** One owner. 200 miles on completely rebuilt engine. New paint, upholstery. Automatic, radio, heater, seat belts, porthole top. $2800. L. Conger, 131B Clearbrook Lane, Costa Mesa, Calif. 92626. (714) 545-2459.

1957 **T-BIRD.** Black, 3-speed, w/ overdrive. 3.00:1 differential, 23 mpg. Mint, completely original. Perfect body, interior. Mechanically perfect (Fomoco rebuilt). Porthole and soft top. Stored every winter. $3100 (603) 448-2970. Philip W. Mans, Slayton Hill Rd., Lebanon, N.H. 03766.

1957 **THUNDERBIRD.** Good condition. $2500 or offer. Contact Capt. S.F. Gregory, Box 5, Ellsworth AFB, S.D. 57706. (605) 342-4079.

1957 **T-BIRD.** White, porthole hardtop, excellent condition. Original owner. $1750. Dr. W. L. Marxer, 2021 Santa Monica Blvd., Santa Monica, Calif.

1948 **WHITE** bus motor home. Chassis and aluminum body perfect. Mechanically excellent throughout. Comfortable accommodations include galley, electric toilet. Attention race and rally enthusiasts! $2900. 355 Garnsey Ave., Bakersfield, Calif. (805) 325-3085.

1949 Willys Overland **JEEPSTER** phaeton. Yellow with black top. Chevrolet 283 engine, automatic transmission, new tires, power brakes, bucket seats. Over $2000 invested; accept $1200. Stan Smith, Rte. No. 1, Box 455, Bridgeman, Mich. 49106.

CAR CLUBS

Vintage **CORVETTE CLUB OF AMERICA**, 1953, 1954, 1955. Primary objectives: strengthen communications; parts locating; national membership roster. Associate membership for anyone interested in vintage Corvettes. Membership $10 year. Write: Ed Thiebaud, 2359 W. Adams, Fresno, Calif. 93706.

GOLDEN LIONS. World's largest Chrysler products enthusiasts association. Restorer or modern, get more enjoyment from your MoPar. Technical help, newsletters. Satisfaction guaranteed. $6. Join: Golden Lions, Dept CL, 909 Edgewood Terr., Wilmington, Del. 19809.

FRONT WHEEL DRIVE AUTO CLUB. An independent non-profit organization of all frontwheel drive car owners and enthusiasts. Membership and beautiful decal, etc. $2.50. Front Wheel Drive Auto Club, Box 22, San Marcos, Calif. **92069.**

WANTED

1964 **COBRA** roadster mags—either American, Halibrand or ? Please state condition and price. Sgt. Thomas W. Umberger, 508-56-3088, 8/A Honor Guard Co., APO 96301 SF.

U.S. and Canadian **LICENSE PLATES** from all states, provinces, territories, etc. Those in good condition would be preferred but are not necessary. Adrian Daff, 71 Pellatt St., Beaumaris, Victoria, Australia 3193.

1937–48 **LINCOLN** Zephyr sedan or coupe. Replies answered promptly. R.W. Kenngott, 2322 Lathrop, Racine, Wis. 53405. (414) 632-1155.

SHELBY 289 COBRA. Will be in USA 28 days only. Must have reply no later than June 20. Send photo and full details. Dennis W. Ditamore, RD No. 3, Williamsport, Pa. 17701.

CLASSIFIED

CORVAIR 1960-69 Speed/Handling Manual. 108 pages tell and show how to rework engines for maximum hp, modify chassis for best handling. Lists parts suppliers. Includes Porsche/VW conversions, dune buggies, Corv-8s. Road & Track (Feb. 1968) said, "If we had a Corvair and intended to get the most out of it, we'd buy this book first thing." Satisfaction guaranteed. $5 postpaid, air-mailed $5.80. No. C.O.D. H.P. Books, Box 868-S, Los Altos, Calif. 94022.

CORVETTE POSTERS. 24 x 38 full-color illustration of 15 models from 1953. Published by the world's finest automotive magazine. Send $3 to: Automobile Quarterly, 245 W. Main St., Kutztown, Pa. 19530.

FRONT & REAR SWAY BARS. See display advertisement. Addco Industries, Lake Park, Fla.

Road & Track **JACKET PATCHES.** 3-inch circle; Road & Track wheel and name embroidered in blue on white background. $1 each. Calif. residents add 5% sales tax. Write: Reader Service, Road & Track, Box 1757, Newport Beach, Calif. 92663.

New "safety-curve" **REAR-VIEW MIRROR.** Snaps over present mirror. Actual rearview photograph as seen from driver's seat and full details, 25¢ (deductible). Write: William A. Fairman, 1619 N. St. Louis, Chicago, Ill. 60647.

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STEAM CAR ENTHUSIASTS: Now available for the first time—a complete set of plans for building your own steam powerplant. The boiler is 17-in. diameter x 30-1/2 in. long and will generate 1000 psi in 15 seconds. The engine is a converted Mercury outboard capable of delivering up to 200-bhp. Plans also include complete details and sources for all the necessary auxiliary components. There are 33 pages in all. $25. Reader Service, Bond Publishing Co., Box 1757, Newport Beach, Calif. 92663.

Automart Classified Order Form

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Car Life, 1499 Monrovia Ave., Newport Beach, California 92663

SHORT REPORTS FROM ACTION LINE

CAREER IN CAR LIFE

ACTION LINE: First, congratulations on the best automotive magazine existing in the United States. With services like ACTION LINE and your Road Test Comparator, I will probably be on your subscription list as long as we both shall live.

I am a high school senior, and I'm trying to decide on a career. I can't imagine myself doing anything that is not related to cars, but the automotive field is rather broad. I have narrowed it down to two branches, and need information on each.

The first is a staffer and maybe eventually editor of CAR LIFE. The idea of testing the new cars, being on the inside of all the new developments, covering the races and then getting paid for it sounds like heaven on earth, to be clicheish (is there such a word?). Just think how nice it would be to have me along in case the test car had a flat and you needed someone to change it.

The second career that I am considering is working my way up to General Manager of Pontiac Motor Division. Dad was our town's Pontiac/Buick dealer for some twenty years, and understandably, I'm one of PMD's stronger proponents. (I must admit, however, that I dig Porsches, Ferraris, 'Vettes, Z/28s, Hemicudas and about seventeen thousand other makes and models.)

What I need to know is this: 1) How much money could I expect to make at these jobs, both starting and top pay? 2) What kind of chance would I have of getting on the CAR LIFE staff? 3) How should I go about preparing for these jobs, which courses should I take in college? 4) How do I go about getting a competition driver's license?

Wendell Franks
Magnolia, Ark.

We are all trembling in our chairs. Anybody who can write a letter that good at, what, 17? will rule the world at 21.

There is no one path to the nut-book business. I was a newspaper reporter who fiddled with racing cars and did freelance magazine stuff. Joe has been earning his living on bike and typewriter, freelance, since he was your age. Wally is from an ad agency. John is an engineer who got into writing through a sports car club.

So what we suggest is to go to college (obviously), and learn to write. And in my opinion, English is a better major than journalism, but the staff is split over this question.

Then look around. There are local races, local newspapers. They can use help, especially if it's cheap. And if you can think of stories with national angles, local boy makes good, etc., the national mags will pay attention.

The pay scale is not for publication. More than newspapers, less than ad agencies. Remember, it's not as though you're working for a living.

The path to Generous Motor is straighter. GM likes to promote from within.

You don't sound very mechanical, somehow, so I'll suggest a business major at the best, straightest college that will take you. Then wait for the recruiters.

You'll have to wait for that competition license until you're 21. While you're waiting, run at the drags. No matter what car you have, there is a class for it. And you'll learn about timing, speed and fixing things that break.

Have you a local sports car club? Run the slaloms, even in parking lots. Driving at the limit at 40 mph isn't as much fun as at 100, but you will learn how to control a car, and you won't be trying to move any unmoveable objects while you're learning.

OLD CHEVY PARTS

ACTION LINE: Would you know of anyone who makes or has a set of stock window frames for a '47 Chevy convertible?

Anthony J. Rossi
Bentleyville, Pa.

Two suppliers of old Chevy parts are Duane Steele, Automotive Obsolete, 12442 Topaz Street, Garden Grove, California 92641 or Garton's Auto, 5th and Vine, Millville, New Jersey 08332.

You might also consider joining the Vintage Chevrolet Club of America. They have a great magazine, called "Generator and Distributor" which you automatically receive when you are a club member. For details, write the membership secretary, Shirley Whitesell, 2812 Garfield, Orange, California 92667.

Another source is a monthly magazine called Chevrolet Parts Mart, *that goes to Chevy parts men. Just write them a "parts wanted" ad stating year of car, make, part and number like "'69 CORVETTE: 427 bare block, 3937717" and then give your name and address. The service is free and is available by writing to Parts Post, Room 1005, Argonaut "A" Building, 485 West Milwaukee Avenue, Detroit, Mich. 48202*

CLASSIC CAR SPECULATING?

"The trouble with buying classic cars to resell," one collector told us, "is that there isn't any one standard price guide to let you know what their true market value is."

We beg to differ with him. For three years now, in March, two college professors in Saskatoon, Alberta, have been compiling information on classic car prices from all over the world, feeding it into a computer and printing the results into a price manual form devoted exclusively to rare automobiles.

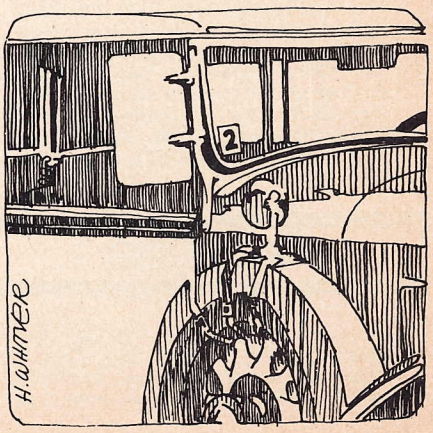
The title of the publication is "Antique Automobile Appraisal" and the latest issue runs a hefty 85 pages, with about 60 thumbnail photographs of classics for identification purposes.

The guide divides car models into "excellent, good and fair" categories with prices for each and even tells whether the number of ads for the model have increased or decreased over the past year.

In the front of the guide is a map showing how many ads were selected from each state. One of the authors, who, incidentally, owns some 25 cars himself, says "We use Hemmings Motor News, Cars & Parts and dozens of small in-the-trade publications for sources."

The authors even have contacts in Australia, Africa, Sweden, the Virgin Islands and India. India? "That's where there's a treasure trove of old Rolls-Royces left over from the Days of the Empire," they told us.

Copies of the guide are $2.95 each from Antique Automobile Appraisal, Box 380, Sub. P.O. No. 6, Saskatoon, Saskatchewan, Canada. ■



On the Beam.

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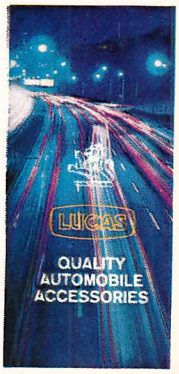
Whether it's safety, convenience, competition or just good looks you'll be right on the beam with Lucas.

For complete details on Lucas quality lamps for your particular needs ask your dealer for information or write for our free, illustrated catalog.



Dept. CL-7 **LUCAS ELECTRICAL SERVICES, INC.** 30 Van Nostrand Avenue, Englewood, New Jersey 07631

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Charger is tickled pink over its new lower price.

Even with new, slightly extra-cost Panther Pink paint, Charger is priced lower than last year. How come? Because of changes like a front bench seat instead of bucket seats. (Don't think of it as losing buckets, you're gaining an extra passenger.) And the door pockets are gone. The garnish moulding on the windows is simpler. And the electric clock is now optional. Still, Charger remains basically the Charger you remember. The shape. The hidden headlights. Racing gas cap. Full instrumentation with readably round dials. Heavy-duty suspension with calmly predictable handling. If you want the tracking any flatter, you'll have to go to Charger R/T. 1970 Dodge Charger. Our classic Super Shape . . . no matter what color it is.

Dodge

CHRYSLER MOTORS CORPORATION